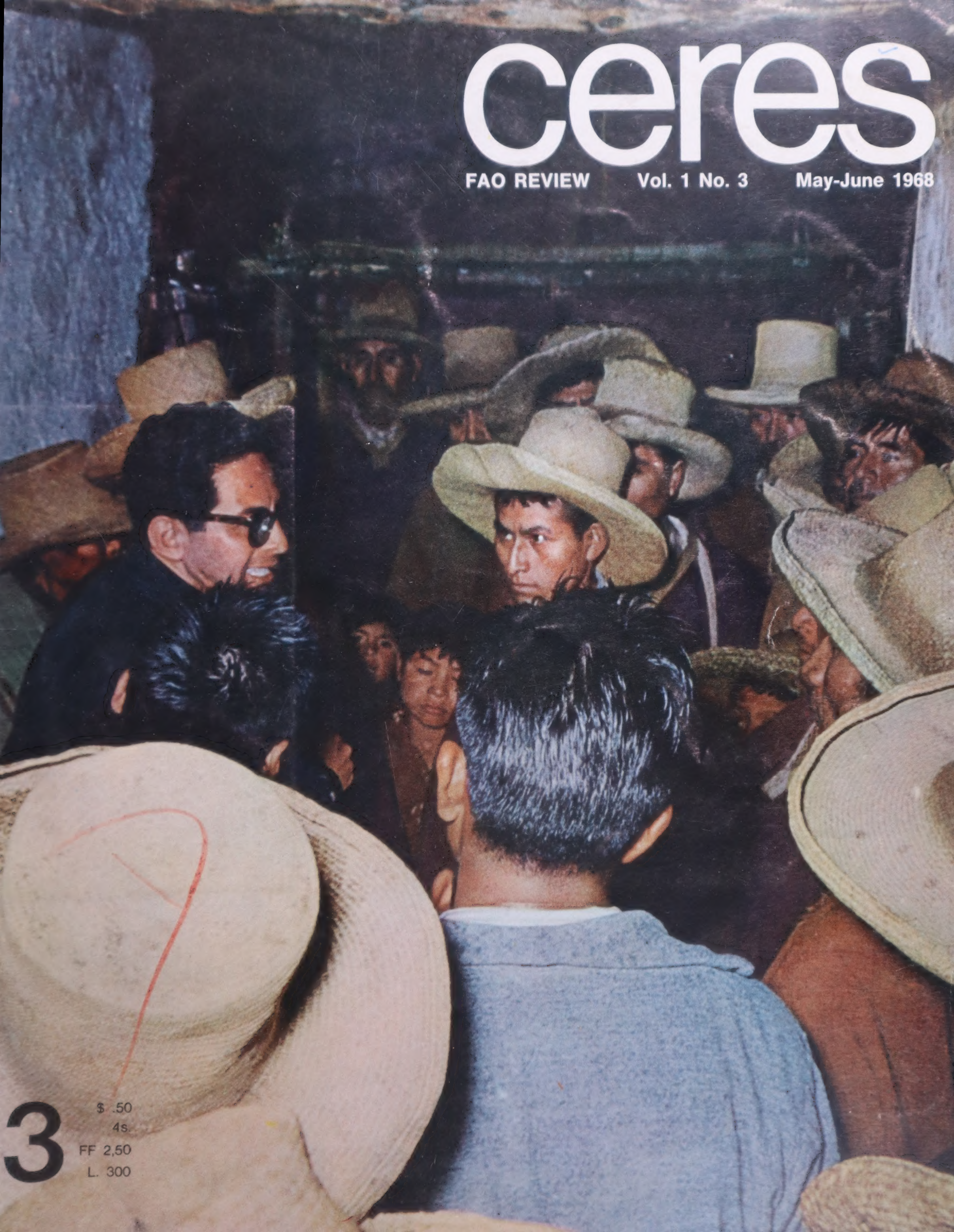


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FAO REVIEW

Vol. 1 No. 3

May-June 1968



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May-June 1968

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In this issue . . .

Chile is one of the few countries where an active land reform program is being carried out. It is also a country where intensive post-land reform activity is under way. The article by **Jacques Chonchol**, on page 41, describes the organization of the Chilean farmers into a cohesive whole, able to make their presence felt in the development process.

Another aspect of farmer organization can be seen in the article, on page 32, by **Derek Bryceson**. A country like Tanzania needs aid but should be, as much as possible, independent of outside assistance, he says. Such self-reliance can only be gained by the efforts of the peasant farmers channeled through cooperative societies.

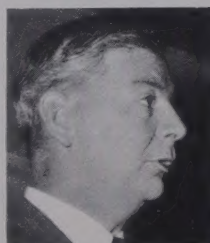
One of the world's foremost economic planners, **Jan Tinbergen**, describes the slow growth of national and international planning toward a new worldwide development plan in his article on page 19. He advocates the cooperation of all the specialized agencies with the U.N.'s Center for Development Planning, Projection and Policies in the preparation of a framework for a global master plan.

The logical outcome of UNCTAD 2 is a rather similar strategy for global development, according to **Janez Stanovnik**, in his article on page 50. Such a strategy would be dependent upon the linking of national and international effort, and on the adoption of adequate social reforms and policies in the developing countries, he says.

The way in which four African countries are working together to develop the Senegal river is a very practical example of national and international cooperation. **Robert N'Dao**, who has worked with this project since its earliest beginnings, is interviewed on page 22.



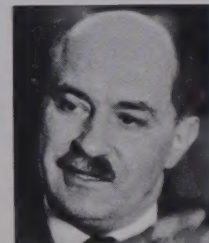
Jacques Chonchol



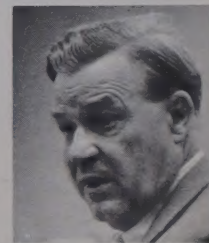
Derek Bryceson



Jan Tinbergen



Janez Stanovnik



Gunnar Myrdal

Another example of successful cooperation is the industry-backed program to increase fertilizer use in some 22 countries, now in its eighth year. A modest sampling from this program can be seen in the picture-story of a woman's lonely assignment in Ecuador (page 36).

Practical help for such programs can be given by FAO's new documentation center (page 25), which may soon blossom into a network of interconnected centers. Too much valuable information has, in the past, been lost in the archives, says the article. Now, technical assistance experience can be quickly brought to bear on specific problems.

Help of a rather different kind is offered by a private organization which is attempting to act as a bridge between the village-level and industrialized societies. **E.F. Schumacher** explains the meaning of intermediate technology and what his group is attempting to do in an interview on page 29.

William Payne, an expert in animal husbandry, suggests a new kind of research, oriented toward the problems of the tropics, in his article on page 46. Such 'meaningful' research would encompass both sociological and technological aspects and should be launched from new regional research-cum-training centers, he says.

1968 may well be remembered for the publication of **Gunnar Myrdal's** "Asian Drama" a three-volume exploration of the growth processes of that vast subcontinent. The flavor of this frank and realistic appraisal can be caught in the book review on page 60 and in echoes from the world press on page 61.

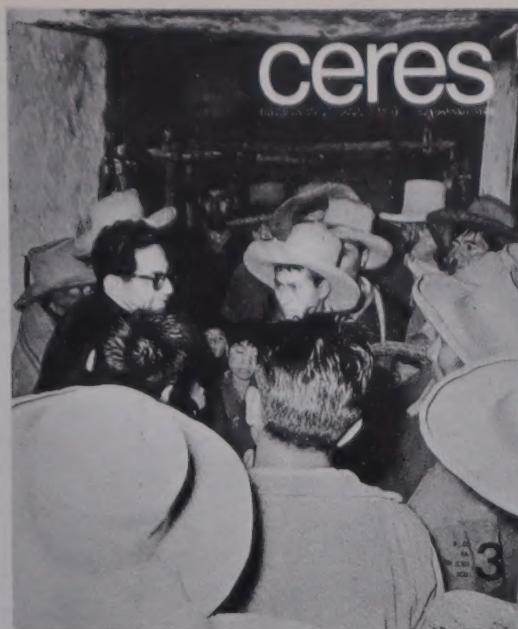


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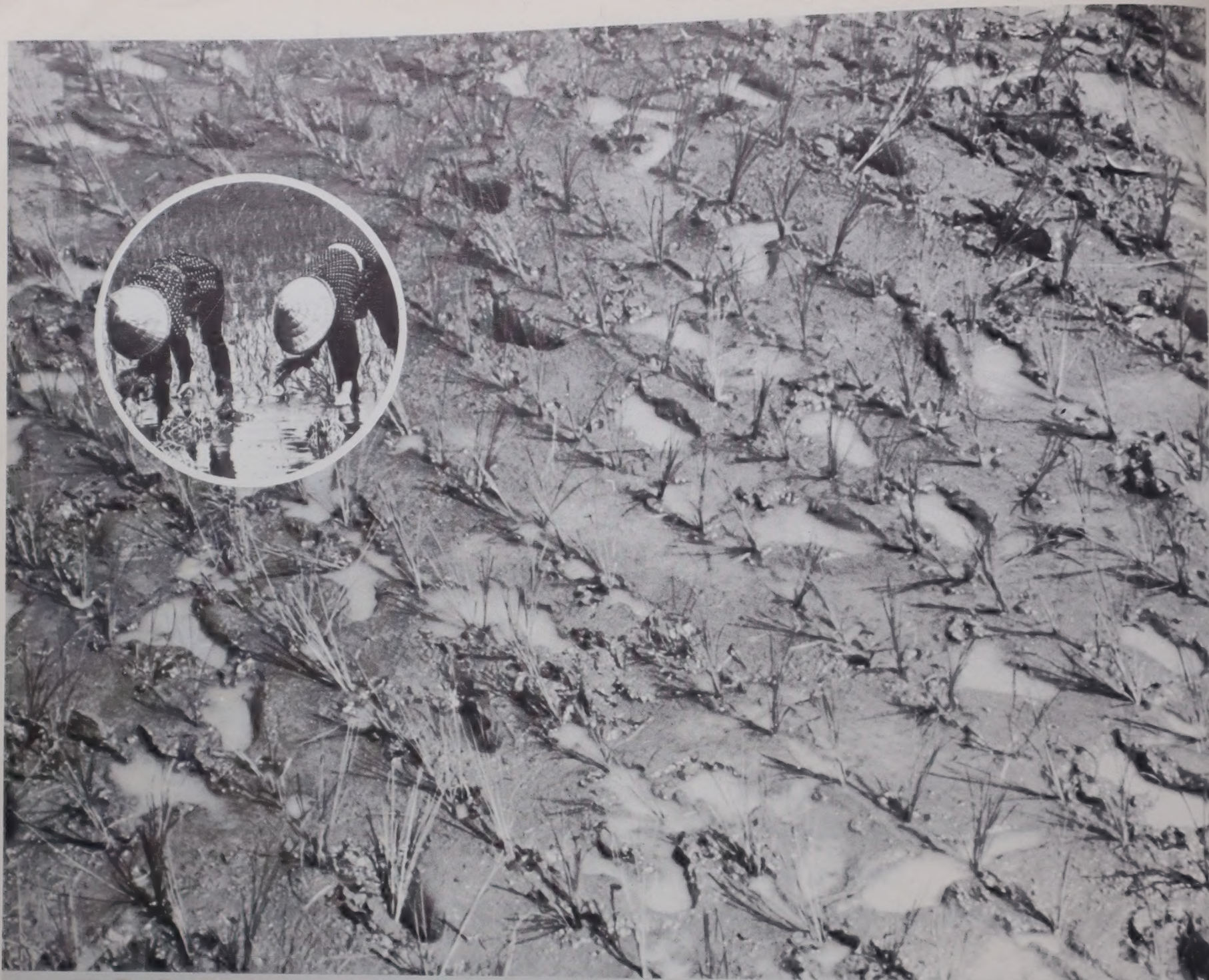
FIAT
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Latin American farmers must form their own organization which can act as a fulcrum for national development. From the anonymous mass of peasantry must come the natural leaders of social change, says the article on page 41. (Photo: A. Pittet).

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AFRICA

■ East Africans and EEC talk trade

Negotiations between the European Economic Community (EEC) and 18 African associated states (mainly in West Africa) for a renewal of the Yaounde Convention started in May.

Similar negotiations for an association agreement are also under way between EEC and Kenya, Tanzania and Uganda in an attempt to strengthen EEC-African links. Previous negotiations were halted eighteen months ago following the inability of Common Market countries to



Union in Africa: Presidents Joseph Mobutu, Jean-Bedel Bokassa and François Tombalbaye agree to form the Union of Central African States

Democratic Republic of the Congo, President Jean-Bedel Bokassa of the Central African Republic and President François Tombalbaye of Chad.

The new union will, at first, be primarily one of economic cooperation, with the emphasis on customs and transportation.

The new regional grouping covers an area of over 1,600,000 square miles and contains a population of 21 million.

■ New Morocco five-year plan

Morocco has just revealed its new 1968/72 five-year plan. It calls for a total investment of \$1,000 million. Nearly half of the money will be spent on dam building and agriculture. When completed, the plan should increase national income by 5 percent. Forty percent of the costs will be financed from abroad and \$200 million in foreign participation is already assured, according to a report from Rabat.

■ Guinea offers new openings for investors

More investments in Guinea are expected to follow the country's new policy of cooperation and coexistence with all countries. Iron and bauxite production is steadily rising and a Canadian com-

pany, Harvey Aluminum, recently made the first shipment from its Boke concession. Among other countries also cooperating in the development of Guinea's economy are the U.S.S.R., Mainland China and the U.S.A. Guinea looks forward particularly to increased French participation.

■ Ghana seeks foreign capital

More foreign investments in Ghana are likely to follow the recent visits of Ghanaian officials to Europe.

In the Federal Republic of Germany, Mr. J.W.K. Harlley, vice-chairman of the National Liberation Council, said Ghana wants Krupp to take part in its large-scale irrigation projects. Other suggestions discussed with Krupp executives concerned the building of freight and passenger ships for use on the Volta artificial lake.

Mr. E. Omaboe, Ghanaian Minister of Economic Affairs, who was in Paris recently for a meeting, said Ghana wants French agricultural experts, particularly for its palm and cotton plantations. French participation in Ghana's development would also extend to other fields. A French company, for instance, may take over the Ghanaian pharmaceutical state enterprise.

agree about the products on which they wanted preferences; also because of the East African states' refusal to accept the principle of preferences for Common Market products in return for duty-free entry of East African goods into EEC countries.

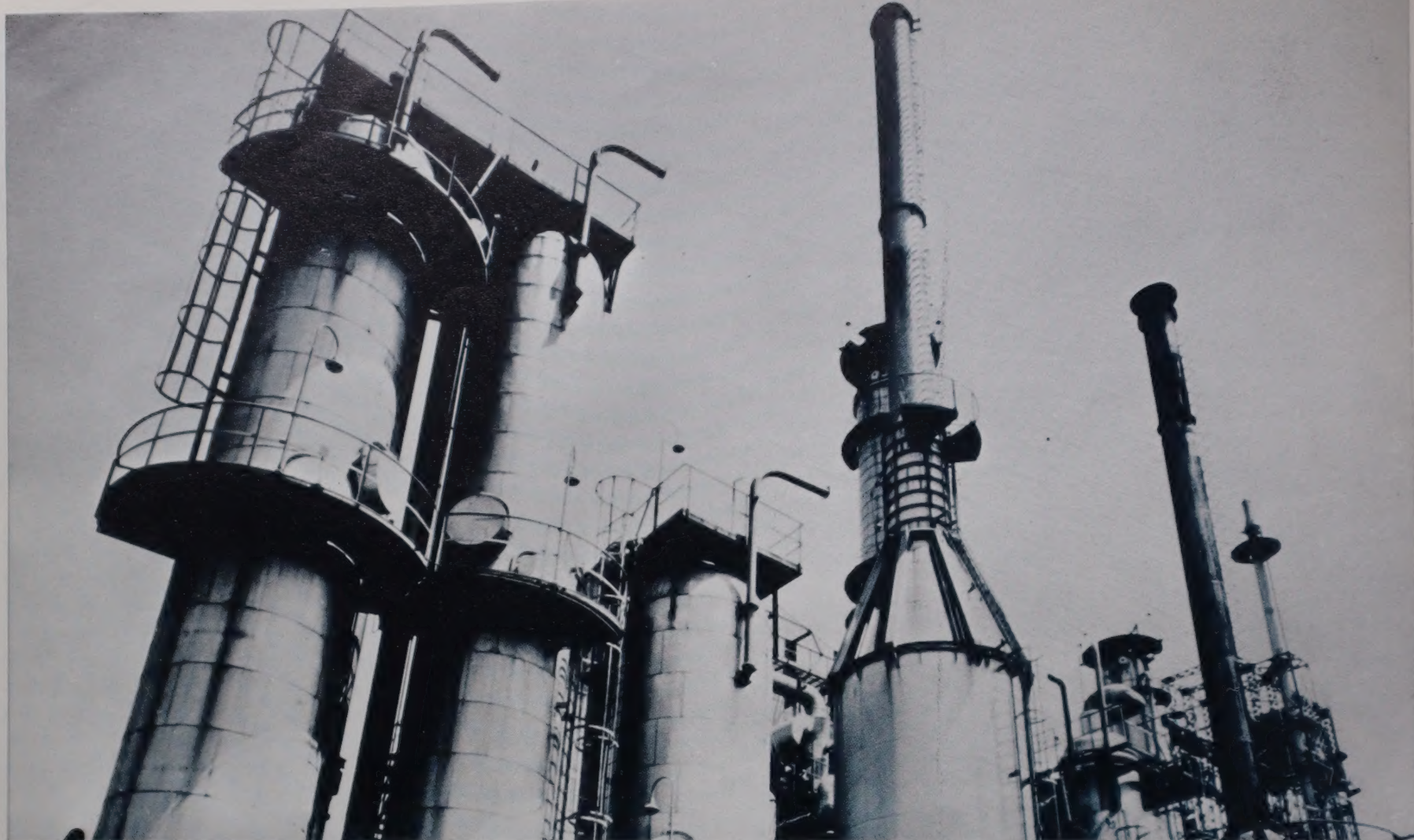
The European Community has now presented to the East African states an "indicative" list of widely assorted items for discussion and selection.

■ African states form regional union

The Central African Republic, Chad and the Democratic Republic of the Congo grouped together last month to form a new regional organization, the Union of Central African States.

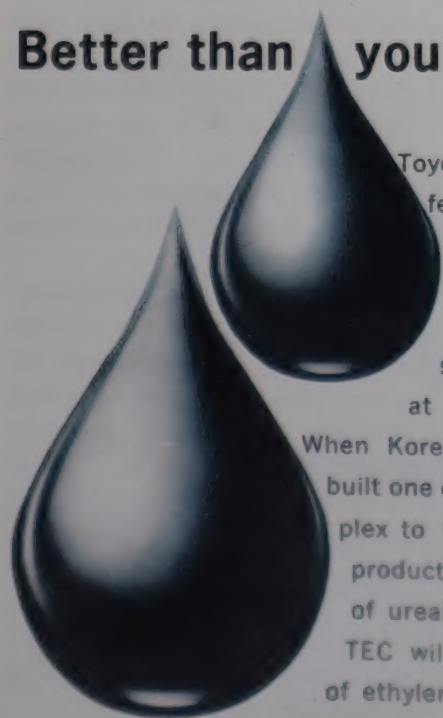
The agreement was signed in Fort Lamy, Chad by President Joseph Mobutu of the

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■ Kenya coffee crop fails

An uncontrollable fungus blight has destroyed 70% of Kenya's coffee crop this year. Coffee has been for years Kenya's top export, worth nearly \$50 million yearly. This year's loss is estimated at 300,000 tons. So far, no effective control has been discovered and many coffee farmers and planters are replanting their land with tea.

■ Malawi: vast new harvests planned

Maize production in Malawi's Lilongwe region should increase about ten times and groundnut production twice during the next 13 years, following the approval of a \$6 million interest-free International Development Association (IDA) loan to the Malawi government to promote the agricultural development of the region.

The loan covers a first phase of 163,000 acres, part of an eventual half a million acres.

Another IDA credit of \$3.7 million will assist the development of 130,000 acres in the Shire valley, where it is hoped to treble cotton production over the next five years through improved cultivation practices and the use of sprayers and insecticides.

IDA credits will cover the foreign exchange requirements of the two schemes and part of the local costs. The Malawi government will cover the rest.

Both the projects were prepared under the supervision of FAO and the World Bank with financial assistance from UNDP.

NEAR EAST

■ Iran reverses the brain drain

To find the needed manpower to implement its fourth development plan, a come-home call will be made by the Iranian government to some of the 10,000 Iranian university and college graduates in Europe and North

America. A special group, headed by a minister, will tour these two continents to recruit personnel from among Iranians now living and working in the more industrialized countries of the world.

■ World's biggest dam for West Pakistan

The contract to build a giant earth dam at Tarbela on the Indus river in West Pakistan has been awarded to a consortium of French and Italian companies led by Impregilo of Milan.

This is the largest single public works bid ever awarded. The project is three times larger than the Aswan High Dam. Tarbela is to be the major contributor in a chain of dams and canals which will provide power and water to 50 million people and 33 million acres of arid land. The central dam will be 9,000 feet long and 470 feet high. The dam will create a lake 50 miles long and will not be completed until 1976.

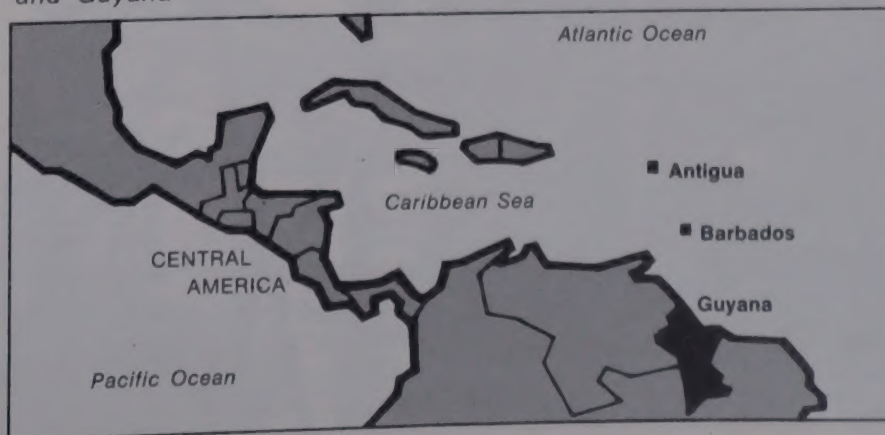
Total cost of the project: \$827 million. The financing has been arranged by a group of seven countries and the Indus Basin Fund under the auspices of the World Bank.

LATIN AMERICA

■ Progress toward Caribbean community

An interregional free trade area embracing most of the Caribbean countries came a step nearer reality following a recent meeting of the heads of governments of the present CARIFTA members: Antigua, Barbados and Guyana.

The three founder members of CARIFTA: Antigua, Barbados and Guyana



Accomplishments included the following:

...drafting of a charter for a Caribbean Development Bank, to come into being in May of 1968.

...adoption of the CARIFTA agreement as the basis for an extended agreement aimed at more complete free trade among commonwealth Caribbean countries, with an eventual full customs union and economic community.

...organization of a Caribbean regional secretariat, located in Georgetown, Guyana.

...agreement to establish various regional services, such as a press service, a bureau of standards and a population center.

The Eastern Caribbean Common Market (ECCM) countries — Dominica, Grenada, Monserrat, St. Lucia and St. Vincent — as well as other Caribbean countries, are still considering various form of agreement.

■ New dam for Argentina approved

The World Bank has decided to take part in the financing of the Chocon-Cerros-Colorado hydroelectric scheme in Argentina which will permit the irrigation of half a million hectares in northern Patagonia. Cost of the project will amount to \$440 million.

A major aim is to bring to an end the periodic floods from the Andes which are a constant threat to this fertile region. The dam forming part of the scheme will be one kilometer long and 75 meters high. Also included in the project will be an 800,000 kilowatt power station.

■ \$182 million investment in L.A.'s forests

A leading role in the expansion of forest industries in widely separated countries in Latin America is being played by private investment.

A Chilean/FAO team set up the Institute for Development of Forestry Resources under the United Nations Development Program (UNDP) which spurred the recent large scale development of Chile's forest-based industries (pulp and paper plants, veneer and plywood mills). During the last six years, more than \$105 million have been invested in these industries, and from 1962 to 1965 exports of Chilean sawnwood rose by 107%.

An Honduran/FAO team recently carried out a UNDP survey of the forest potential of Honduras which spotlighted that country's resources. It eventually led to a government partnership with the United States International Paper Company for the construction of a \$77 million pulp and paper plant in that country.

The plant, the largest International Paper project outside the United States and Canada, will have an annual production capacity of 40 million board feet of lumber and 210,000 metric tons of linerboard.

NORTH AMERICA

■ \$10 million in contracts to be awarded

The list of new United Nations Development Program projects approved by the UNDP governing council in January, to be carried out by the United Nations and its various agencies, calls for nearly \$10 million in contractual services over the next few years.

The larger contracts include \$1 million for forestry consultant services over the next four and a half years to pave the way for a national forest development plan in West Africa. Two contracts for nearly \$1 million each will



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be required for a pesticide plant to produce, among other chemicals, 1,000 tons of DDT annually in the Near East; and survey work preparatory to river valley development in the Far East. Other contracts include an amount of \$650,000 for technical and economic transport studies in Africa and \$500,000 for a marine seismic survey in the Caribbean.

Between 1959 and mid-1967 UNDP projects involved 337 contracts worth more than \$62 million and equipment purchases totaling some \$88 million.

■ Briton heads surplus disposal group

The 41-nation subcommittee on surplus disposal of agricultural products re-elected John Eaton, of the United Kingdom, as its chairman for 1968 at its recent meeting in Washington. José R. Sanchis Munos of Argentina was elected vice-chairman.

The subcommittee is FAO's intergovernmental forum for overseeing the orderly transfer of agricultural products from food-rich to food-deficit countries. It works under a set of rules designed to prevent "dumping" of agricultural surpluses, or the emergence of unfair competitive practices in international trade. These rules have the status of an international convention and are known as the "FAO Principles on the Disposal of Agricultural Surpluses."

■ IDA: \$400 million a year for loans

Over the next three years the International Development Association, an affiliate of the World Bank, will dispose of \$1,280 million for loans to developing countries. Major contributors are the United States (\$480 million), the United Kingdom (\$155.5 million), the Federal Republic of Germany (\$117 million) and France (\$97.2 million). Other major donors are Australia,



Robert Strange McNamara, president of the World Bank

Canada, Italy, Japan, the Netherlands and Switzerland.

Because of its present balance of payments difficulties, the U.S. contribution can now only be used for purchases inside the United States.

Sweden has announced that it will make an additional contribution to IDA of \$21.36 million in freely convertible currencies over the next three years. This would be in addition to the \$29.64 million contributed by Sweden to the \$1,280 million fund.

■ Who owns the seabed?

Recent findings of manganese outcroppings on the ocean floor have stirred international action on the problem of seabed jurisdiction. Acting on a Malta proposal, the United Nations General Assembly has set up a committee to study practical means to promote international cooperation in the exploitation of the ocean floor.

A resolution covering the establishment of a United Nations licensing authority for exploitation of the seabed has been proposed in the United States Senate.

The U.S. government has designated an interdepartmental committee, chaired by the State Department, while the U.S. Marine Science Council is financially backing three research projects on international law and marine minerals, fisheries and scientific exploration.

ASIA

■ ADB backs Thai Corporation

The Manila-based Asian Development Bank has approved a \$5 million loan to the Industrial Finance Corporation of Thailand.

The aim of the loan is to help the corporation contribute to the industrial development of Thailand.

This loan is the first made by ADB from ordinary capital resources. The bank started operations 18 months ago and has so far also helped finance a major agricultural survey of the Asian region and agricultural production in Indonesia.

■ U.S.S.R. and India cooperate on development plans

India and the Soviet Union want to cooperate more closely in their development plans. The economic planning commissions of both countries will meet before the start of India's next five-year plan in 1969, and the Soviet Union's in 1971, in order to coordinate their activities.

The commissions will consult particularly over the use of aid from the Soviet Union to India. Present Indo-Soviet trade stands at around \$180 million annually.

The Soviet Union is expected to accelerate its purchases of Indian manufactured goods, particularly railway wagons and jute.

EUROPE

■ Agreement on food standards

Agreement has been reached on international food standards for canned fruits and vegetables, a range of sugars and glucose syrups and other commodities.

The joint FAO/WHO Codex Alimentarius Commission, a 50-nation body, met in Rome for its fifth annual session ending 1 March.

The commission is attempting, through its own work

and that of its various subgroups, to arrive at standards of food quality, hygiene, labeling, additives and pesticide residues which can be adopted by governments in their national legislation. It is hoped, in this way, to remove nontariff barriers to trade and thus contribute to food availability.

■ New industries investment venture

New ways to increase cooperation between the United Nations and industry and to facilitate industrial investment in developing countries were worked out at a meeting in March of FAO's Industry Co-operative Program.

Representatives of 37 major international firms met in Rome under the chairmanship of Dr. V.H. Umbricht, managing director of Ciba A. G., who was also elected program chairman for 1968.

Dr. Umbricht appealed for the adoption of "a widely acceptable code of conduct for the protection of private investors." This, he said, would allow private concerns "to



Dr. V.H. Umbricht, chairman of the FAO Industry Co-operative Program

be as enterprising as they would wish to be." He expressed regret that some developing countries tended to see such a code as a form of discrimination against them. He appealed also to private enterprise to adopt "an attitude which reflects recognition of today's conditions."

Informal arrangements on industrial fibers pave way for similiar commodity agreements

A new technique for dealing with international market and price problems of various commodities, first adopted for jute, kenaf and allied fibers, has now been extended to two other groups of fibers: sisal and henequen; and abaca.*

some commodities due to technical problems.

FAO's Consultative Committee on Jute, Kenaf and Allied Fibers has worked out a technique of informal international commodity stabilization arrangements which seems to be working satisfactorily.

The relative success of these informal arrangements is due to three main reasons: because most of the key personalities in each relevant industry and trade sit at meetings side by side with their government representatives; because of the informal, flexible nature of these arrangements; and because of the very real pressure to evolve workable solutions at the meetings in the light of the critical conditions facing the respective fiber industries concerned.

These conditions include the growing competition from the new polyolefin synthetics, the downward trends in world fiber prices, and upward movements in labor and other costs in most countries. Not only have exporting countries been anxious to assure a future for their exports of fiber, but importers too, unwilling for economic and technical reasons to commit themselves wholeheartedly to the new synthetics, have wished to assure themselves of supplies of natural fiber at a mutually negotiated price.

In jute and kenaf these informal consultations have mainly sought agreement on an indicative price range for a representative export grade of jute, to be supported by

a recommended monthly or quarterly phasing of purchases by the major importing countries and by the internal price and marketing policies of the key agency on the exporting side, the Pakistan Jute Board. At a recent meeting for example, representatives of the main countries exporting and consuming jute agreed to revise the indicative price range in the light of sterling devaluation.

In sisal and henequen, where no one exporter predominates, the informal indicative price arrangements, as worked out for jute, have been carried a stage further by the elaboration of a full, though still informal, export quota system.

Under this system it is intended to support the market at an agreed price level sufficient to maintain both a viable industry in the producing countries and a competitive price in the face of synthetics.

In abaca, where the number of importers is limited, a third informal technique has been evolved: that of agreement as to an appropriate price level which the major importing interests agree round the table to pay in the market. At a recent meeting, for instance, buyers and sellers of abaca and their government representatives agreed that producers need urgent assistance and that the present price of the fiber should be raised to maintain a minimum level of production in the main producing country.

The traditional formal commodity agreement tends to be rather rigid and cannot be easily and quickly modified to meet changes in world supply and demand; it is difficult to arrange for

* Abaca (Manila hemp—95% of which is produced in the Philippines) is mainly used for marine and industrial ropes, nets and cables, with lower grades and waste going into paper. The higher grades have been hard hit recently by growing competition from synthetics: sisal and henequen, which are cheaper, compete with the lower grades. The bulk of sisal is used for baler and binder twine, though it is also employed in rope manufacture. Henequen is similiar to sisal though somewhat weaker. It is used for industrial and commercial twines as well as a packaging material. Jute is mainly used for making bags and sacks, backings for carpets and, increasingly, in manufacturing felt.

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WOOD

A top foreign exchange earner

Forest products are among the fastest growing exports of the developing countries as a whole and are the top foreign exchange earners of a number of African and Asian countries, according to an FAO report presented at UNCTAD 2.

In the ten years, 1955-65 the export value of these products grew from \$280 million annually to \$770 million. This total is expected to reach \$1,500 million annually by 1975. The developing countries' export trade in these products continues to grow at a considerably faster rate than world trade, and at a very much faster rate than that of these countries' all-commodities trade.

A number of dramatic increases are quoted in the report, such as the Republic of Korea whose exports of hardwood plywood increased more than 100 times between 1960 and 1966, from 2,300 cubic meters to 272,800 cubic meters.

However, only two fifths of these forest products are at present exported to the developed countries in processed form. By 1975 this share should, and could, increase considerably, says the report. Processed forest products present unusually favorable prospects for early, rapid and large-scale expansion of exports from the developing countries.

COTTON

Lower crop forecast for this year

The world cotton crop in 1967/68 is estimated at 47.2 million bales as compared with 47.8 million bales harvested a year earlier and a record high of 53.1 million bales in 1965/66, according to a recent report from the U.S. Department of Agriculture.

The production estimate from the U.S. was reduced to 7.6 million bales, due to a reduction in acreage and lower yields. Crops in Mexico, India, Iran, Israel and the U.S.S.R. were also reported to be lower.

Asia and Oceania account for a major part of world cotton production, estimated at 17.1 million bales for 1967/68 as compared with 4.9 million bales in Africa and 3.8 million bales in South America.

COFFEE

Way clear for new agreement

The second International Coffee Agreement should now come into force when the 1962 agreement expires at the end of September.

The final area of disagreement — namely that of the exports of soluble coffee from Brazil which, in the United States' opinion, had been facilitated by discriminating treatment in favor of green coffee processed in Brazil — has now been resolved.

The new agreement prohibits the application of governmental measures which constitute discriminatory treatment in favor of exports and re-exports of processed coffee as compared with green coffee; provision is also made for an arbitration panel to settle disputes between member countries.

The export quota mechanism of the 1962 agreement was successful in holding stock off the market and in improving and stabilizing prices. Annual export earnings from coffee have been raised by over \$500 million.

The aim of the new agreement remains unchanged though there has been some readjustment in basic export quotas. The system of selective quota adjustments, in order to maintain adequate supplies of the different types of coffee at equitable and stable prices, is being maintained. Quota-free exports to

certain countries which consume little coffee will be continued in order to develop new markets, but control measures are to be strengthened.

The long-term problem of coffee supplies is to be tackled by the establishment, before the end of 1968, of production goals for the 1972/73 coffee year and by setting up a diversification fund to help producing countries become less dependent on their coffee crop.

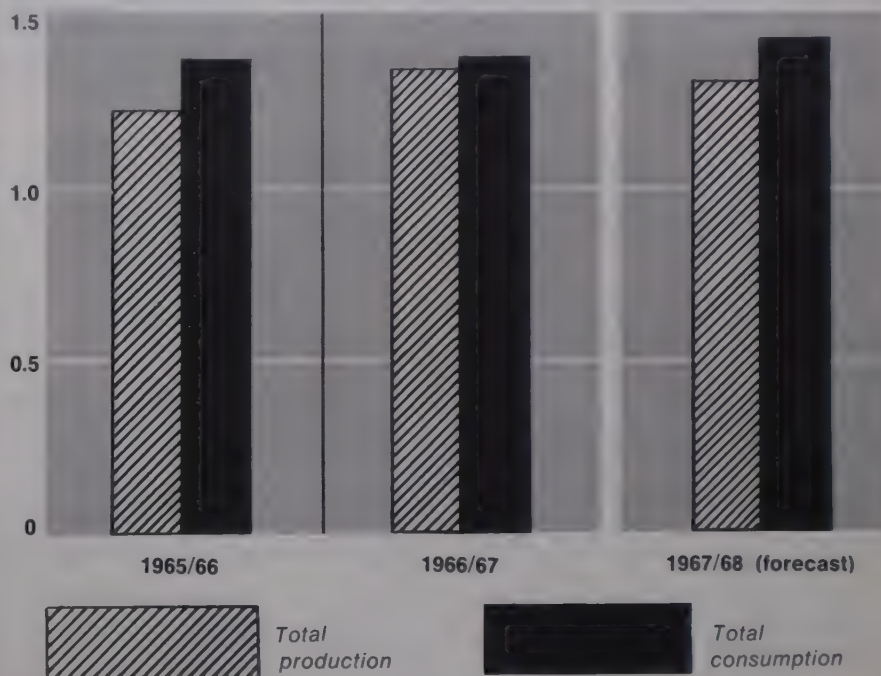
metric tons for the calendar year 1968, a slight increase over the revised figure of 1,389,000 for the previous year.

Europe and the U.S.S.R. will account for nearly 750,000 metric tons of this estimated total, followed by North and Central America with a consumption figure of nearly 350,000 metric tons.

For the third year in succession production has been more than 300,000 tons below the record crop of 1964/65.

World production and consumption of cocoa

Million metric tons



COCOA

Consumption again higher than production

World production of cocoa in 1967/68 is forecast at 1,308,000 metric tons, slightly down from the revised estimate for the preceding crop year of nearly 1,347,000 metric tons, according to the committee on statistics of FAO's Cocoa Study Group, which met in Rome in April.

Africa is expected to produce the lion's share, more than 950,000 metric tons, followed by South America with slightly more than 230,000 metric tons.

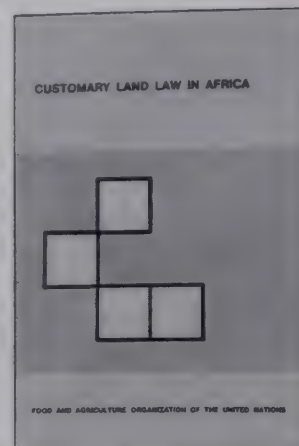
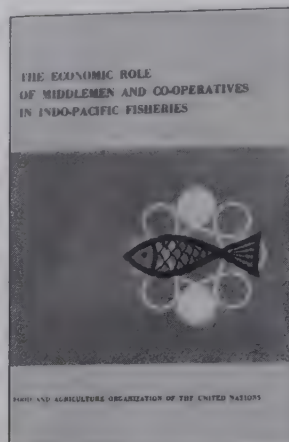
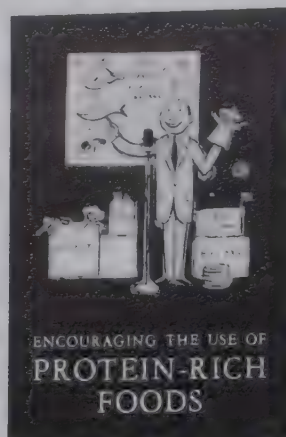
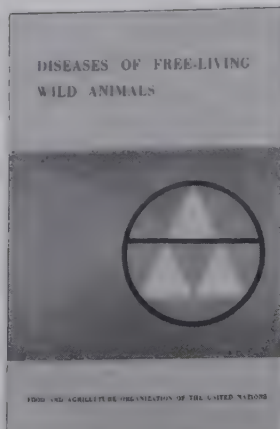
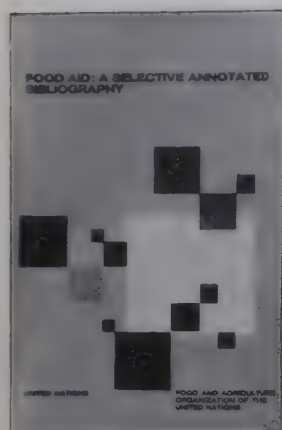
World grindings (consumption) are forecast at 1,419,000

The trend in grindings is still upward, despite an apparent stagnation of demand in some of the major consuming countries.

Consumption has been rising over the past nine years. At the present time world reserves do not represent more than two months production. Up till now the imbalance between production and consumption has been balanced by the record crop of 1964/65.

Prices rose again during 1967. During UNCTAD 2, the principal producing countries — Ghana, Ivory Coast, Cameroon, Brazil and Nigeria — went some way toward a possible price agreement with the principal consuming countries.

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Specific attention has been given to such characteristics as the main breeding areas of the locust, their composition and structure, vegetation, importance of rainfall and close association of seasonal weather and migration.

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covering such aspects as forest organization, fire control and the development of roads. It concludes by stating that with the introduction of adequate protection and a sound forest management, these pine forests could produce enough wood to sustain a far more extensive forest industry.

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Available in English, French and Spanish editions, p. 96.

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

opinion

seeing beyond one's nose

From an editorial by Bernard Hollowood in Punch.

...It should be fairly obvious that the strength of the rich countries lies in their economic versatility — their ability to switch labor and capital resources quickly to meet the needs of the market.

If the world wants color TV, then the west rejigs industry to supply it. If the world wants pills or sporting equipment or man-made fibres, then the west shuffles its labor around and turns out the goods, at fancy prices.

The underdeveloped nations, on the other hand, have no such opportunities. They have the know-how to produce only a very restricted line of raw materials and agricultural products.

The west encouraged these countries to produce nothing but cocoa, tea, coffee, rubber, rice, coconuts and so on; encouraged them by guaranteeing to buy heavily. But no price was fixed, and the guarantee usually promoted overproduction. So the poor nations were stuck with a rigid economy utterly dependent on the market for their subsistence. They were, and are, in the pockets of the rich.

The past fifty years have demonstrated that communities which are encouraged to put their trust in a narrow range of products are extremely vulnerable, and at the mercy of the rest of the world.

Even Kuwait, the richest state on earth, is anxious: any scientific development that puts oil in the background would automatically convert the people of Kuwait to the primitive desert nomads they were thirty years ago.

Undeveloped and underdeveloped nations must be helped to diversify, to industrialize and to compete with the west in the production of manufactured goods. And the west, responsible for their present plight, has a duty to provide them with

the resources to accomplish this diversification.

The west has now to decide whether it is prepared to allow millions to descend to the acutest poverty by refusing to sacrifice an insignificant fraction of its bloated standard of living, or whether to step up its aid to a level that will make the poorest countries economically viable.

It is not an easy choice, for governments survive only when they please the pockets of the electorate and the electorate, almost everywhere, is so stupid and selfish that it cannot see the end of its nose.



stoking our own fires

From an address by M. Louis Nègre, Minister of Finance in the Republic of Mali, at UNCTAD 2.

...I approach this problem from an angle which is likely to be rather disagreeable. I feel an obligation for us, the developing nations, to look at ourselves just for once, frankly and critically, especially in this august assembly; for our conference cannot be merely the forum for criticising (sometimes perhaps rather superficially) only those countries which are already developed.

It is certainly legitimate (and indeed "good form") to require industrialized countries to revise the rules of the game of international trade. But what have we done ourselves to facilitate trade within our own regions? Our products are subject to the same ridiculous system of taxes and tariffs, even though they are not competitive; and although our periodic meetings (at least so far as west African states are concerned) are ostensibly devoted to harmonizing our legislation on tariffs and taxes, they almost invariably end in admissions of deadlock — and therefore in failure.

And what is happening to economic and industrial collaboration? We have enough tobacco and match factories to set fire to the whole of Africa! We all have textile industries — but sometimes no cotton; lots of slaughterhouses and cold-storage facilities — but very often

no livestock; lots of sugar refineries, but scarcely ever any cane sugar. Or again, what is there to be said for the proposal to set up an iron-and-steel industry at subregional level, when it appears that no final agreement has yet been reached among the countries concerned?

There you have a description in broad outline of the present state of economic cooperation among the countries of west Africa. It is as disappointing as any platitude.

My country's position in this matter is anyway quite clear and unambiguous. We, in Mali, hold that economic cooperation between underdeveloped countries (such as our African countries) can bear lasting fruit only insofar as it is based upon a partnership of peoples who are fully conscious both of their rights and of their obligations, and who are resolved to make mutual concessions in order to ensure that each participant enjoys his fair share of real advantages accruing from projects which are jointly put in hand.

We hold that such cooperation should not be confused with a vague association for mutual aid or solidarity, whose motive principle is one of brotherliness or "fraternalism," quite as dangerous as any paternalism since it will only confirm the wealthier partner in the privileges which he already enjoys. Still less with any division of labor between nations on a regional or subregional level, which would have the effect of crystallizing the inequalities bequeathed by the colonial system and which would run the risk of finally and permanently condemning certain countries to being nothing but markets for the others.

change of heart

From an address by Professor J. Mayone Stycos to a meeting on population problems in Latin America

...Although the intensity of effort varies greatly from country to country, at the present time 18 Latin American and Caribbean governments provide some degree of support to family planning programs.

In 1967, the International Family Planning Federation spent more in the

Latin American region than in all other regions combined. In this same area, AID (Agency for International Development) during 1965 and 1966 invested in family planning campaigns double the amount it had spent in other continents on similar programs.

The rapidity with which this situation has come upon us is as remarkable as the fact that it has occurred at all. In 1960 there was only one private group dedicated to family planning in the whole of Latin America; that was in Mexico and was run by North Americans. In 1967 only three nations lacked such programs: Nicaragua, Haiti and Bolivia.

pro and con modern technology

From an article by Gerard Piel, publisher of Scientific American, in the Bulletin of the Atomic Scientists.

...The hordes of underemployed people in the countryside and of the plainly unemployed in the squatter cities have encouraged the idea that development programs should call in labor-intensive technologies. A strong case can be made for the opposite strategy.

In the first place, there is a generation or two of labor-intensive work to be done in every pre-industrial country on the infrastructure of ports, rails, highways, housing and buildings.

When it comes to the productive apparatus, on the other hand, this ought to incorporate the most advanced developments in science and technology. The model is the petrochemical plant, with two operators at a control panel.

Technology at this stage of perfection is highly portable, easily installed, makes least demand on local human resources, and operates at the same efficiency independent of local conditions whether in Galveston or Kuwait.

In sum there is no reason why, with adequate capital and technical assistance from outside, the prospective new steel industry in Chile should have to evolve through the beehive coke oven and backyard blast-furnace phase. Ideally, it should install direct reduction and continuous casting at the outset.

The application of science and technology to development may, therefore,

offset and reverse the forces that tend to widen and deepen the gap between the rich and the poor...



two halves make a whole

From an interview with Edgar Faure, French Minister of Agriculture, appearing in Enterprises.

An effective global plan of aid to the third world is almost impossible without real international cooperation.

It would seem to be very difficult to effect an operation of this magnitude without complete international cooperation, embracing both east and west, both market and centrally planned economies.

It would be difficult to obtain the unilateral consent of either camp to an equal amount of its gross national product for aid; difficult, in other words, to conceive of such a plan from the point of view of the recipient rather than that of the donor.

why call it aid?

From an article by Taya Zinkin in the Daily Telegraph.

When the Italians lend money at 6½%, they call it aid. When the Japanese pay reparations, they call it aid. When the British pay tiresome colonies money to go away, they call it aid. When the French provide money for African countries to compensate Frenchmen with, they call it aid. When an oil company finds oil, that too is aid.

This is all very odd. Aid, as the name denotes, is charity-helping those who are less fortunate than oneself. To lump private investment, or reparations for damage done, under the aid label is a misnomer.

The reason for this misnomer is quite simple. The developed countries have all been bulldozed at the United Nations

into promising to hand over to the developing countries 1% of their national income. Except for the French, they have no intention of making such enormous gifts. For the United Kingdom it would mean over £300 million a year, much the same sort of money as is at present splitting the government. So, naturally, the developed countries put everything into the aid rag bag: gifts, soft loans, hard loans, military assistance, technical assistance, suppliers' credit, re-scheduling of debts, anything they can rake up.

The western voter, told that he is providing 1% of his income in aid, sees himself as a Galahad. The Pakistani official, who finds himself paying 6% on a seven-year loan and then 20% extra for his generator because the supplier knows that he cannot go shopping around, sees the Galahad as a Shylock.

The story of aid is littered with nonsense: Russian snowplows for Guinea, which has no winter; a refrigerated van for Iran meant for vaccines, but used to bring caviar up from the Caspian instead; Russian arms for Indonesia used to kill Communists; IMF loans for Argentina accompanied by such inappropriate advance that the national income went down.

If such nonsense is to be avoided, three rules have to be adopted. First, business must be separate from charity. Second, the donors must get together. And third, they must be prepared to tie very tough strings round their aid...

CREDITS

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If there is disillusionment with technical assistance it is largely because of ill-planned and uncoordinated ventures of national, bilateral and multilateral aid.

Here is a significant attempt at a global plan for development

The way out of the labyrinth

by JAN TINBERGEN

Everyone knows that our world is becoming smaller and smaller. We can now reach Tokyo, or Santiago, from Europe in about 18 hours, half the time it took ten years ago. Every year some 15% more people fly and see countries they have never seen before. Even more people do not fly, although it is cheaper than you think," but they see other people coming into their countries. They see something of the way of life and prosperity of the people who can afford to fly: they see things they would like to have themselves.

For an even longer time many have known that their living was dependent on what distant populations bought from them. The Brazilian coffee planter and his employees know this. The metalworkers of Europe know that they earn part of their income because of diesel engines constructed for Argentina or India. The Japanese know that they must build ships for Europeans, and so on. Without such mutually dependent relationships incomes would be quite a bit lower.

There was a time when ruling groups everywhere thought that economic life could best be left to itself, and that free enterprise and free competition would automatically lead to the best of all possible worlds. But this is no longer believable or we have seen too many misfortunes resulting from free enterprise: unequal incomes, misery for the unemployed, the sick and the old; recurring crises with mass unemployment; erratic fluctuations in the prices of coffee, cocoa and rubber; the richer countries becoming richer at a faster pace than the poorer countries.

We have learnt that freedom is only fruitful within a controlled framework. Income tax and social insurance were introduced to eliminate the extremes of poverty. Budget

policies were enacted to counteract economic cycles. Markets were regulated so as to reduce the most violent price fluctuations. A very modest start has been made in transferring income from the rich to the poor countries rather than the other way round. We now have a complex system of state intervention within which freedom can exert its stimulating influence without unduly damaging human relations.

It is mostly the national governments who are organizing taxation, market regulations, social insurance and so on. National governments are the most important power centers. Power has a tendency to shift from local, state or provincial authority to federal or centralized authority.

Recognizing the need for world order

The national systems of socioeconomic intervention are sufficiently complex to require careful preparation, which we now call planning. Preparation is needed if a complicated mechanism has to be changed. This is especially so if changes are needed within long-term processes. A long time is required to build a dam and, if a start is not made on time, there may be a long period without electricity or with inadequate water for irrigation. Education also takes a long time. If the right educational facilities are not created when they are needed, then there may be too few engineers five or ten years later on.

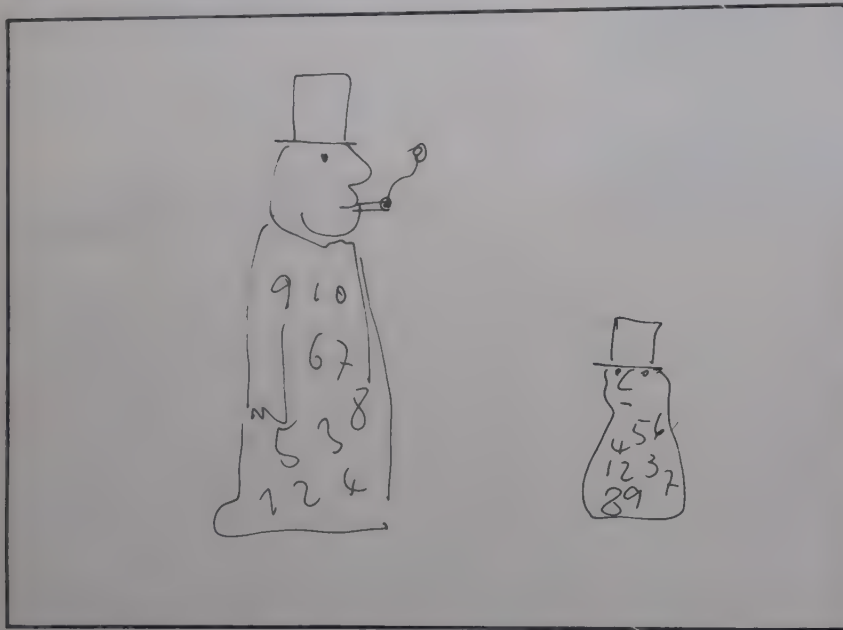
We must look ahead. We must set ourselves targets in order to check the efficiency of our policies. We must coordinate the actions taken by various groups, organizations or ministries so that they fit together. When the factory is erected, the machines must also be ready for installation; the roads and trucks to transport both raw materials and finished products must be available; housing for both the workers and engineers must be built. A great many factors often have to be accommodated into a balanced system. This is why planning has been accepted not only in eastern Europe and main-

Jan Tinbergen is professor of development planning at the Rotterdam School of Economics, head of the Hague Institute for Social Studies and chairman of the U.N. Development Planning Committee. He has been economic adviser to many developing countries and is the author of *On the Theory of Economic Policy*, *Economic Policy: Principles and Design*, *Shaping the World Economy*, *The Design of Development and Central Planning*.

land China, but in every large industry and by almost all governments.

National governments claim to be autonomous in many respects. While single citizens have to behave according to the many laws of the country — and law and order has taken the place of the jungle familiar from Westerns or from history books (at least, in a majority of countries for a majority of the population) — national governments claim the right of the strongest, "right or wrong, my country."

Somewhat wiser men have shown us that many disasters have been caused by this attitude. Other disasters will follow unless we recognize the need for international order. But governments, and their parliaments, are changing their attitudes very reluctantly. We found that wheat prices could only be



"A very modest start has been made in transferring income from the rich to the poor countries, rather than the other way round... if we do not enter into a state of war with poverty we may find ourselves involved in other kinds of war"

kept under control if there was an international wheat agreement which both governments and producers had to obey. We have discovered that trade policies cannot be left to the jungle, and we now have GATT, UNCTAD, common markets and the like under construction. But still, on so many occasions, governments behave like bad little boys.

We now have international institutions whose task it is to regulate on a worldwide basis what cannot be left uncontrolled. The International Labour Organisation and the Food and Agricultural Organization are among the most venerable of such institutions. The International Bank for Reconstruction and Development and the International Monetary Fund were created after the second world war, prior to the central organization, the United Nations itself. There are others, Unesco, UNIDO, the World Health Organization and so on: they are the beginnings of what we must hope will, sometime, be the ministries of a world government. But be careful not to say so; for a large number of governments will show their bad-boy mentality. For the time being such international bodies have more modest duties which they carry out very well.

We are discovering the need for coordination at the world level, for looking ahead so that the pieces can be fitted together more precisely. This has brought us to the beginning

of global planning. FAO is a pioneer: its Indicative World Plan is the first such attempt, the prototype version of which will be ready in 1969. The ILO is working hard on a World Employment Plan.

The U.N.'s Center for Development Planning, Projections and Policies (CDPPP) is preparing what could well be called the framework for a master plan covering all such activities. This is part of the task imposed on it by assembly resolutions which request the secretary-general, in plain words, to prepare future development efforts which are an improvement on the present development decade.

I like to speak of DD 2, or the Second Development Decade, as the subject of this coordinated undertaking in global planning. One of its most important tasks will be to create a set of coherent statistics which will enable us, year after year, to check the effectiveness of our operations. In business, everybody is subject to such checks: if someone fails to meet his goal, he must explain why; if he has exceeded the target, so much the better for him and for all concerned.

The various international bodies should follow the example set years ago by the OECD countries, formerly known as OEEC (Organization for European Economic Cooperation). Periodically, each country's socioeconomic policy is thoroughly investigated by two other member countries and their findings are discussed in full plenary session: many useful suggestions have resulted from such a scrutiny. We can hope that in the future, at the international level, the performance of both governments and of international agencies will be examined from the point of view of benefiting common interest, that is, that the world at large (rather than at small) becomes prosperous.

The major task of CDPPP will be to set some general goals and to indicate the main ways by which these goals can be attained at both national and international levels. The goals should not be overambitious, because they will then be unrealistic. But they should not be realistic in the sense of being overcautious and without imagination, the realism of the *status quo*. As in every dynamic enterprise, there should be an element of difficult achievement stimulating all involved to do their utmost.

Involved in other kinds of war

There is every reason to urge the utmost effort. To often the prosperous countries, and the prosperous strata of poor countries, take it easy without understanding the present emergency situation. We are faced with a tremendous challenge. Hundreds of millions of people live in misery: hungry and ill-fed; suffering from disease; living in dwellings that hardly deserve the name, or without dwellings like the two hundred thousand people in Calcutta who eat and sleep in the streets with no more shelter than their rags — true also of many in Latin America and Africa. If we are not ready to enter into a state of war with poverty, we will soon find ourselves involved in many other kinds of war. I use the phrase 'war against poverty' to indicate the needed state of mind.

The advantage of having a plan for DD 2 is that we can then visualize our "war goals" and concretely define the obligations of all social groups, including governments.

But the center cannot do this task by itself. The cooperation of all the specialized agencies is needed to find out what is really possible in the various fields: in agriculture, industry, trade, education, population policies and so on. The center's provisional framework for a master plan will have to be discussed with all the specialized agencies. Changes will be proposed and the center is needed to see that such changes are mutually consistent.

Thus, a complicated procedure of calculation and consultation will have to be developed over the next two years, one of the tasks being to carry it through on schedule. It is well known that one of the most difficult accomplishments is to be on time and to also maintain a sense of proportion: to be able to leave out details if the operation can be saved as a whole.

But before knowing what are details and what are not, one has to look into every little corner: this helps to explain the size of some of the international organizations, the large quantity of paper consumed, the number of subunits, of meetings, of people. The efficiency of the international organizations is sometimes severely criticized, often based upon comparisons with industry. Some of these criticisms may well be justified and, in any case, their operations should be continually scrutinized for they are financed by the national taxpayers.

Yet, a sense of proportion should guide us and we should try to understand the dimension of the problem. It is relatively easy to efficiently organize a business of fifty or a hundred persons for they can be seen at work. It is less easy to supervise an enterprise of 10,000 or 100,000 employees.

The world at large has a population of three billions, that is, three thousand million. Think of three cubic meters of

Not all citizens would be actively involved but, if we stick to a democratic way of dealing with our problems, the adult population would have to be consulted in one way or another. Such consultation would be at various levels: local, state, federal, national, continental or regional and, finally, global. And some such consultation is necessary for we must know how, for instance, the individual farmer in Asia reacts to new possibilities, to the use of fertilizer, better seeds, more water and new varieties of crops.

The field workers of the international organizations are faced with such problems; they often only really know what is going on "in the field." But it is highly desirable that all the coordinators, and the coordinators of the coordinators, and the coordinators of the coordinators of the coordinators remain aware of how the people at the grass-roots level are behaving, reacting and thinking. This does result in a network of relations which is, indeed, near the top, appalling in its complexity. Criticism which is not based on a knowledge of such difficulties is easy to make.

A new plan for the 'seventies

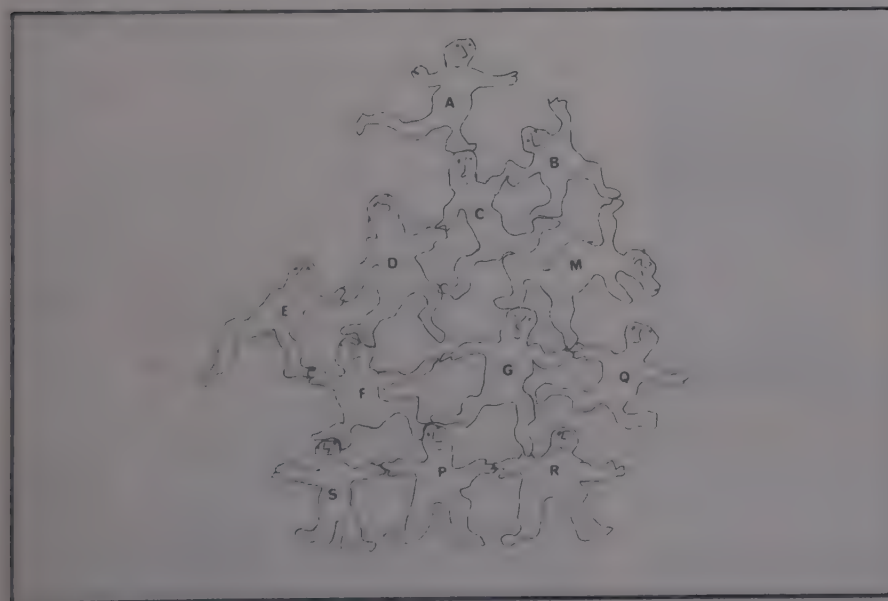
But let us return to the joint operation of the U.N. family necessary in order to enter the 'seventies with an improved development policy. What I would like to advocate is an operation carried out in four main phases: firstly, two phases covering the framework for a master plan, the main features only; then, two phases leading to the construction of a more detailed world plan. In each case, the second phase would take into account comments from all levels: specialized ("sector") agencies, regional ("geographical") agencies and governments. The framework would indicate the main features while the master plan would cover regions and, in some cases, individual governments if large countries posing major problems are involved.

The complete work should be ready by 1970 for submission to the U.N. General Assembly as the basis of the Second Development Decade: a decade in which we hope more progress will be achieved than is possible in this decade.

This objective is of such paramount importance that all the energies of the United Nations family should be directed toward it.

It requires a state of mind of the decision makers involved which, unfortunately, does not exist everywhere. Our actions must be determined by the interests of the whole, all of us, together. We must overcome attitudes of narrow national thinking, of narrow departmental thinking, of narrow individual thinking. The world situation demands that national delegates think internationally and that civil servants think interdepartmentally. A unified operation is what is important, rather than the glory of a single agency, whether it be FAO, Unesco, the World Bank or CDPPP.

I know that many readers, blown by the cold wind of reality, will doubt whether such an attitude can be created. Much will depend on the leadership of those directly responsible. Their task is far from easy and a great deal of courage will be needed. Let us wish them success in their efforts to be real leaders and let each of us apply the same standards to our own work and responsibilities.



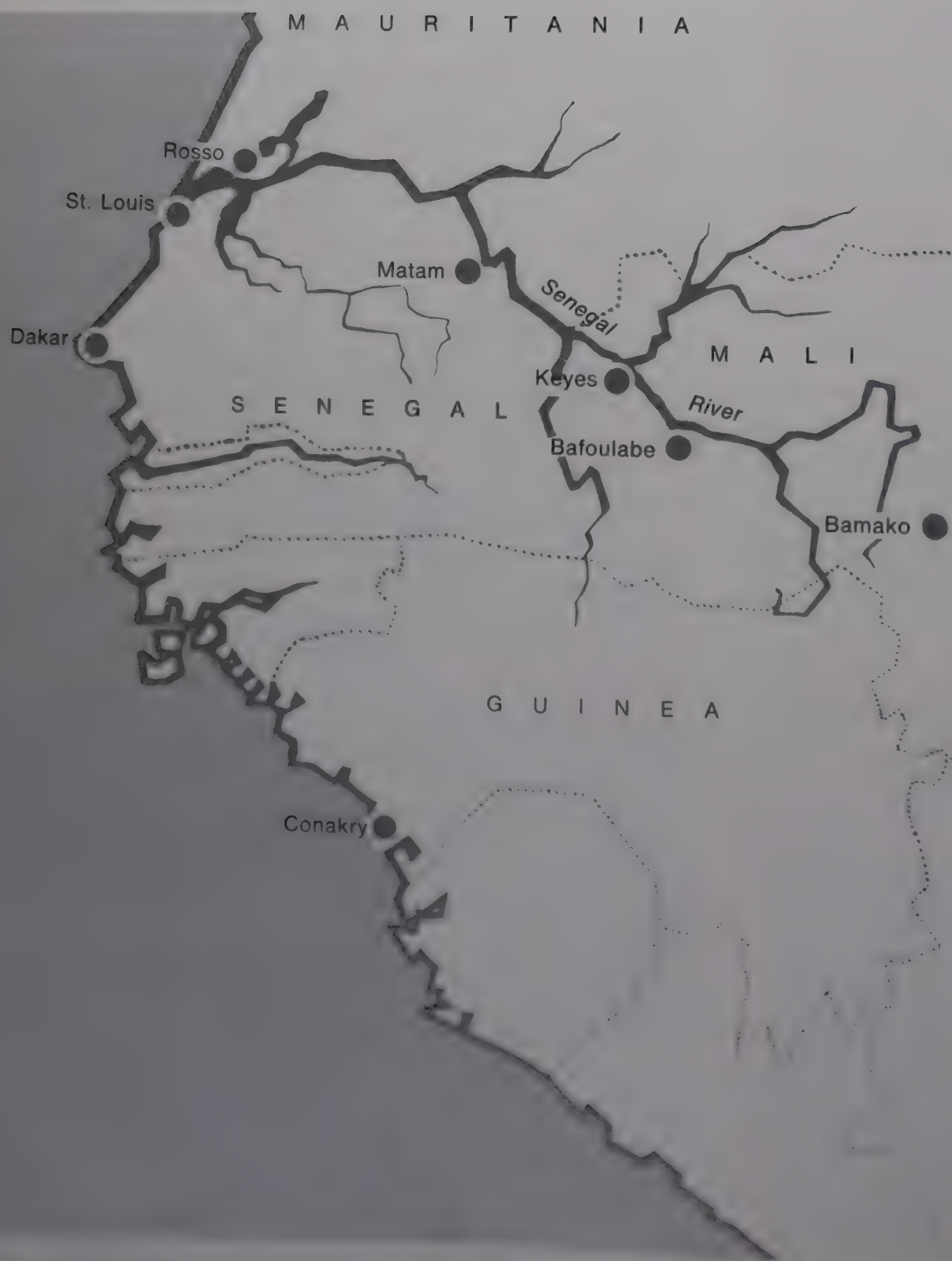
Organizing something in which all the citizens of the world are involved... It is highly desirable that all the coordinators, and the coordinators of the coordinators, remain aware of how the people at the grass-roots level are behaving, reacting and thinking"

timber. Imagine they are sawn into little cubes measuring one cubic millimeter each. Now, imagine you want to see all the three billion of these little cubes at once. Spread them out over the floor: you will need a space 55 meters long by 55 meters wide. Organizing something in which all the citizens of the world are involved means supervising that square of 55 by 55 meters filled up with tiny cubes of wood.

Once upon a time, four brothers lived by a great river

Guinea, Mali,
Mauritania and Senegal
have joined together
to develop the
Senegal river basin.
Robert N'Dao, who heads
the four-country team,
talks about this aim

by **ROBERT CURTAT**



Framed by the doorway, the river stretches away from Saint Louis into the haze of the delta. In his office, Robert N'Dao, secretary-general of the inter-governmental committee for development of the Senegal river basin, envisages the future:

"Down this formidable, wild river flow some 22,000 million cubic meters of water over an average year. It represents a reserve of one million hectares of cultivable land, enormous hydro-electric power potential and a thousand kilometers of navigable waterway. The river is one of the most extraordinary means of development that nature has bestowed upon us. Taming and harnessing it is our endeavor and our adventure."

The passion of the pioneer sounds in the words of Robert N'Dao, from Mali, a man of athletic build dressed in a comfortable suit with open neck, a high forehead over a sculptured face. Respect grows quickly for this man who has made the development of the Senegal river the main task of his life.

It was a long, hard road from July 1962 at Conakry when representatives of Guinea, Mali, Mauritania and Senegal signed recommendations "to develop the potential of the basin for the benefit of all," to November 1965 at Nouakchott, when the four heads of state of the countries bordering on the river formally declared that they wished to build the

* Robert Curtat is a journalist on the staff of Tribune de Lausanne.

future of their peoples around the river. A further difficult stretch led to November 1967 at Bamako when Modibo Keita, President of Mali, recalling the spirit of Nouakchott, urged the peoples of the river and the political leaders of the four countries to find "large-scale solutions to our burning economic problems."

After so many other appeals, this anguished plea by a head of state clearly shows that this part of Africa, a wedge into the Atlantic, is in a state of underdevelopment.

All the conditions of long-term poverty are to be found here: the race between agricultural production and an expanding population; the unequal fight against unfair terms of trade; the iron law of international commerce which leads the poor into ever-greater poverty; the predominantly subsistence economy at a primitive level, incapable of providing for a better life; the rigidity of social organization; and living standards so low that poverty can only perpetuate itself.

Intolerable state of affairs

In traveling through the countries bordering on the river it is impossible to contradict the authors of FAO's remarkable *African Survey* from whom we have borrowed the foregoing lines.

The mask of underdevelopment lies everywhere. It marks poverty as a habit and the smallest luxury as an insult. It marks the futility of disjointed efforts. It marks the national struggle against misery. Underdevelopment brands the hundreds of thousands of people grouped in tribes along the banks of the river, enclosed in ancient social structures in which power rests upon cattle ownership. It marks the peasants subjected to the vagaries of the weather and to the ravages of disease: to the terrible onslaughts of *onchocerciasis* which leaves whole villages blind; to malaria which strikes throughout the basin. It marks a million human beings condemned to ignorance for lack of classrooms, teachers and money. This frightful burden of ills, due both to nature and to man, weighs heavily on the Senegal river project.

Reliable statistics tell us that the average per capita income of the region, what would be handed out to each inhabitant if everyone received an equal share, is \$75 a year. Try to imagine that on the

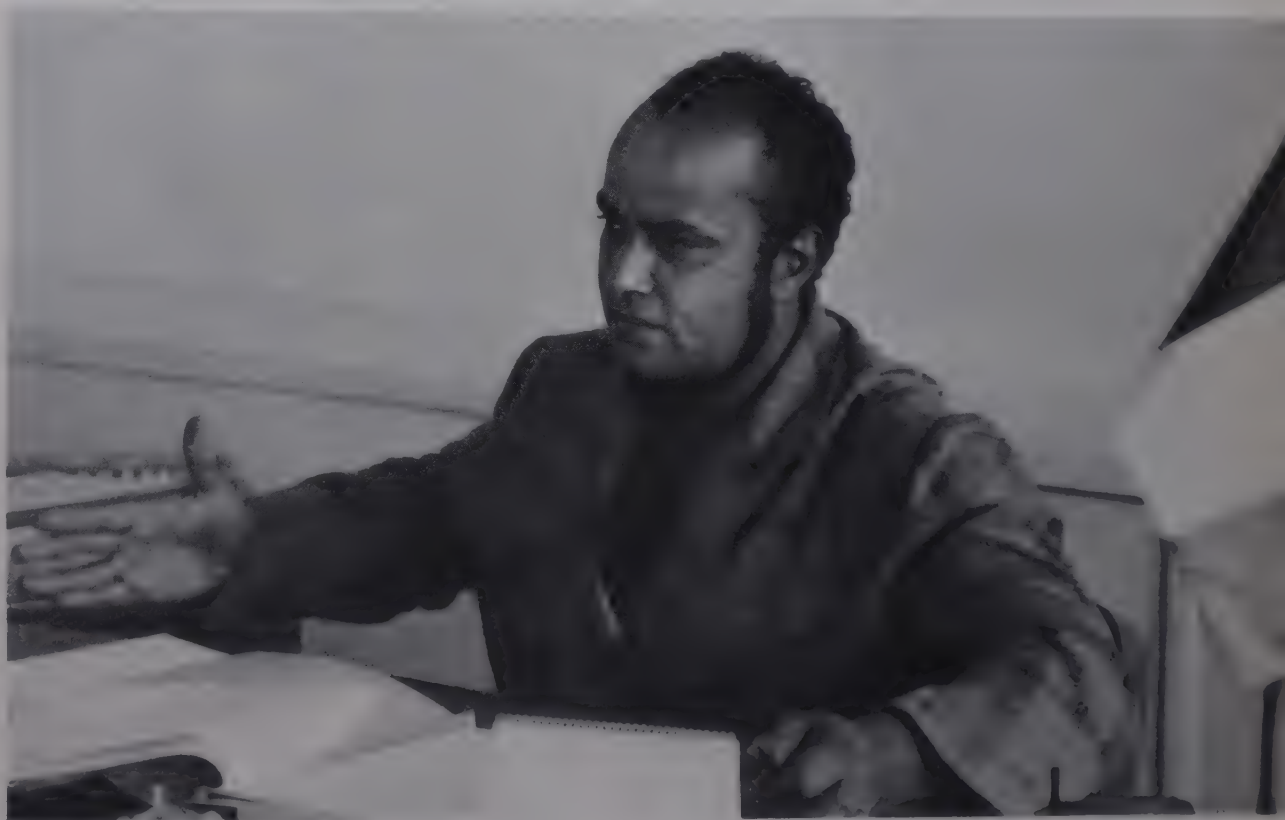
first day of the year there is \$75 in your pocket knowing that there will be nothing else to live on until the end of December.

Regional development centering on the river is an urgent remedy against all those conditions in which "poverty tends to perpetuate itself." In November 1967 at Bamako, the project received the highest guarantees after having proved during the preceding two years that it was an indispensable element in cementing together the river states. Bamako was an early stage, but its achievement required men devoted to development of the basin, men who could negotiate these first rapids with ease. Robert N'Dao, who has been one of the steersmen from the beginning, sums up the struggle:

"What is demonstrably simple is all the more difficult to carry through. We are experiencing as many difficulties as

a sleepy administration or national susceptibilities touched on the raw. Nothing is more difficult than to convince people that small, mean reasons stand in the way of our project. Finally, everyone has to agree on the future use of the river for improved agriculture, power and river navigation."

Robert N'Dao first tested the banks of the river and hacked out rock samples in the upper basin as a young geologist. He knows the obstacles nature has put between the present and the future: the ridges that cannot be crossed without powerful modern equipment; the prevalent diseases; the climate which grips the peasants and bends their heads down to the ground, condemning them to sow too late when the floods have receded, hoping only that the sun and the insects will leave them part of their harvest.



N'Dao: "We will have to struggle without ceasing before the first light bulb receives electricity wrested from the river, before the floods are controlled and the stored water reaches the first cultivated plot"

the founders of the European Common Market; even more because we are poorer. Our only wealth is the future, what the signatories of our birth certificate called the common potentialities of the basin.

"We will have to struggle without ceasing before the first light bulb receives electricity wrested from the river, before the floods are controlled and the stored water reaches our first cultivated plot.

"We will have to struggle against men at first because in an undertaking such as ours nothing is more damaging than

In the close, stagnant air of the delta, men and women live and work very much in this way, as do their brethren in the valley. In spite of government efforts, despite aid, a giant effort will have to be made before their condition can improve. Walter Lippman has written: "We know now, both in theory and in practice, how to replace famine with abundance."

Robert N'Dao, like so many of us, subscribes to this hope but he also knows just how the long battle of development will have to be waged throughout the

Senegal basin: "Great ills call for great remedies. We must break the present vicious circle of underdevelopment, in which we are forced to live on charity, for we cannot tolerate such a state of affairs."

These remedies cover the following four points:

— Gouina, a dam capable of regulating the river flow by retaining 20,000 million cubic meters of water. A feasibility study is being completed by a Swiss group who will shortly submit a report on the economic and financial implications of the proposed dam site.

— From Saint Louis to Kayes, a hydro-agricultural study of the basin, requested by the four riparian countries, is being carried out by an FAO team under a United Nations Development Program (UNDP) project. Two pilot plots for agriculture will be established in this area under the second phase of this project.

— A study is under way of the Senegal's main tributaries — Faleme, Bafing, Baoule and Bakoy — as they cross the Manding plateau in the upper basin. The discovery of important mining resources in this area has given fresh impetus to the whole undertaking.

— Finally, the navigability of the river from Kayes to its mouth, representing about 1,000 kilometers of waterway, is under study as is the possibility of opening up the continent to the sea by breaking the bar at Saint Denis.

In Robert N'Dao we discover a man who is not only a geologist, agronomist and economist but also a river pilot and a guide to the future. We see with him the million hectares of potentially irrigable land, a marvelous reserve of bauxite lying on the frontier between Guinea and Mali, vast rice crops which could be grown as the result of controlled flooding: all these are his weapons of conviction. And, since he has the knowledge, he does convince people.

A major African victory

He strengthened his beliefs in the United States and Europe where he saw what others have achieved in irrigation, river navigation and the production of electric power. He is one of those who believe, and who have every reason to believe, that in the Senegal basin there

lies an opportunity for a major African technical victory:

"We are going to set up irrigated plots of 500 hectares each, one at Matam in Senegal, the other at Rosso in Mauritania. One thousand hectares, that's nothing."



"Priority number one ... Gouina dam"

ing, but they will provide a start for our tests.

"The people of the basin will begin to feel that they belong to a region, and to understand the African way of international cooperation. We shall also set up two zones for animal husbandry outside the valley because we must put an end to the frantic search for the last grazing grounds of the dry season.

"At the same time, there will be the Gouina dam, priority number one. At long last we are going to start taming and using the river as a powerful modern means of regional development. All this will quickly follow efficient studies. Afterward, there will be the gradual establishment of a new granary for the world. Everything is there. It has got to be done. And we are going to do it."

Robert N'Dao's faith is nurtured on reason. Like the Reverend Father de Breuvery, of ECOSOC's Resources and Transport Division, who more than ten years ago launched the idea of multi-country use of the river's resources, he

thinks that the new states are bound to quickly reach the ceiling of possibilities for development if they remain within their cramped frontiers. To enter the 20th century in force, it is necessary to want things in a big way and to achieve them on a similar scale.

International organizations, who have contributed nearly \$12 million to various studies, are keenly interested in the regional development of the Senegal river. All the U.N. agencies are anxious to support the integrated project, and this generosity has had to be coordinated at conferences in Milan and New York. FAO, which has a large share in the overall operation, maintains a mission at Saint Louis, whose chief, Jacques Grolée, has acquired remarkable competence in the problems of African agricultural development.

A past and a future

The Senegal night envelops the house by the river, obscuring the big map of the basin on the wall, while Robert N'Dao tells us about the interest that the project has aroused abroad.

"Firstly, we had to come into being. But now we exist and interest goes far beyond the boundaries of the river countries.

"We represent a past and a future for those people of the river who have never let themselves be enclosed within administrative frontiers. They are going to help us win the battle. It is a paradox, but they know that they do not know enough. So they go at it, tooth and nail, to gain knowledge, and they are successful. They must be part of it at all costs. I have lived with them for years. I have seen unskilled laborers become excellent drillers in six months."

Robert N'Dao has more to say about the future. I watch the smile on his face as he talks about new boats, the growing rice, mighty dams, about what will be the beginning of happiness to two million peasants, rather than merely a way of improving production.

And looking at this passionately simple man, I quite understand that he will not like this tribute and that he would never accept it without mention of the men of Bamako, Nouakchott, Dakar and Conakry who, with him, form the river team. ■

Twenty years in a second

A computerized retrieval system, part of FAO's documentation center, means that the accumulated experience of agricultural development is readily available to everyone



EVERYTHING PUBLISHED ON THE OLIVE

An electronic memory gives quick access to the stored experience of technical assistance

by **JEAN-CHARLES ABREU**

An epidemic threatens cattle in the Far East and the animals must be immunized at once. One of the regional experts remembers that a similar outbreak had been successfully dealt with in Madagascar. But he doesn't remember the formula of the vaccine or how it was produced.

A cable is immediately sent to the FAO Documentation Center. By return post, the center sends back micro cards containing information on the vaccine, abstracted from the proceedings of a meeting held in Rome two years before.

This is the simplest, swiftest and most complete way of solving a problem of this kind, whether for an agricultural specialist working in the developing countries, a student preparing his degree

thesis or for an industrialist faced with a production problem.

From now on, FAO can supplement the skill of its experts with the capability of the computer and the knowledge of its memory banks in which lie the indexed experience of more than 20 years of technical assistance activity.

"Where there is activity, there is paper," cry the enemies of bureaucracy. But in the mouth of Gerard Dubois, in charge of the center, it ceases to be a satirical phrase. Quite the opposite, for the service offered by the center turns hitherto useless documents into valuable items.

The panoply of administration — notes, reports and statements — is not an evil in itself. Everything depends on

the way it is used: it can be left to lose its value, carefully stowed away in a woollen stocking in a secret drawer, or it can be put at the disposal of mankind.

FAO chose the second road in 1966. The idea first occurred to Raymond Aubrac, a former engineer with the French Highways Department, while working on a project to establish sheep in arid areas of Morocco.

"We lost six months and spent several million francs just preparing the plans for stone sheep pens. There was no wood and we made do with what we had. Two years later I met an expert who, for many years and without timber, had been building stone pens in another area of North Africa that were much better than ours. His plans and reports were lying idle in a drawer at Rome headquarters."

Many experts are daily trying to solve rural development problems which have already been solved elsewhere: the waste runs into millions of dollars a year.

The Documentation Center has a budget of \$100,000, several offices in an annex to the main building and a staff of a dozen analysts and indexers. The center is built around a computerized information retrieval system, in which references from FAO's 150 publications and from two to three thousand documents (out of some 12,000 produced each year) are being stored. This modest but effective entry into the era of electronics has already avoided costly false moves and duplication of work.

The language of the computer

The computer uses a language. It would have been convenient to use the index system of the FAO library, but decimal classification is unsuited to the multiple cross-indexing needed.

Such indexing is particularly valuable in order to preserve and use all the information gathered on assignment. For instance, one expert who wanted to find out the home market for wood products, so as to ascertain whether it was worth developing forest exploitation in Turkey, completed a thorough study on energy sources needed for the production of power and for heating.

This study is very complete and could be extremely useful but normally it would be hidden in a report on forest exploitation. By indexing documents under a

great number of headings and subheadings, however, the computer will recall this study whenever such key words as heat, energy, power or heating are raised in connection with Turkey.

The index system consists of "descriptors": words or groups of words, which define, without homonyms or synonyms, the concepts under which information is to be listed and retrieved. Thus, a very simple language has been created; so simple that questions asked of the machine must be phrased very carefully.

For example, it is not enough to ask the computer what has been published on olive cultivation in the Mediterranean: it is necessary to add the names of all relevant Mediterranean countries.

Specialized indexes available

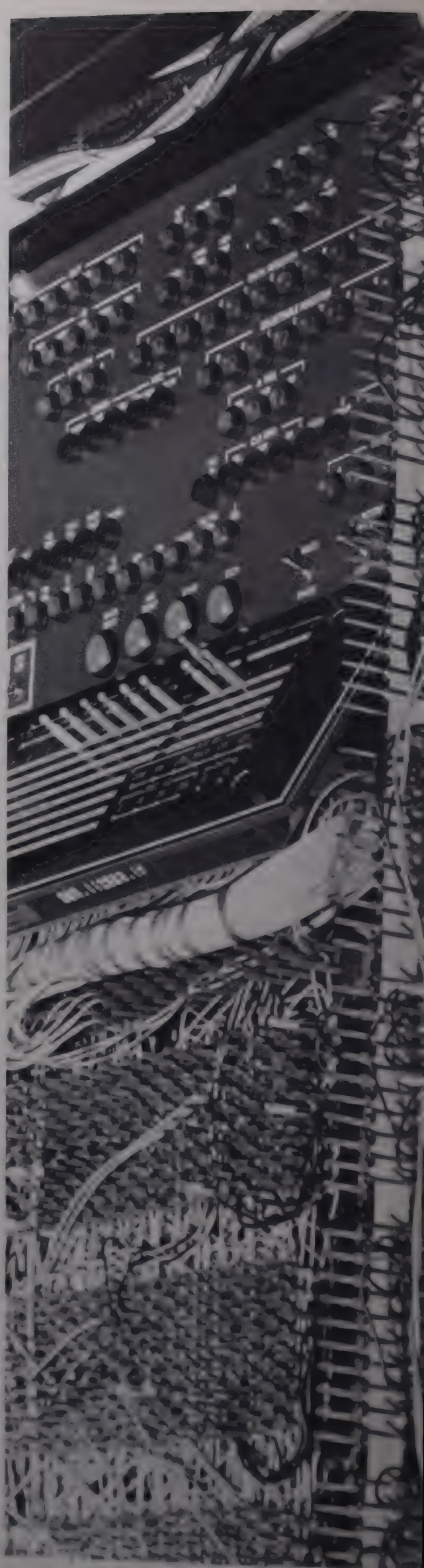
The questions sometimes seem bizarre: a government adviser in Laos once asked for everything that was available on the breeding of frogs. More usual customers are, for instance, a pulp and paper company wanting to obtain details on the industrial processing of certain tropical woods, or a graduate student preparing a paper on nutrition problems.

The reply which comes back from the typewriter coupled to the computer is in the form of bibliographic references. Occasionally, questions that are too vague or badly put force FAO specialists to spend time on research or to ask for additional details.

A monthly index of current production of documents is being published. It consists of two parts: one is bibliographical, containing summaries of the documents in their order of accession; the other is analytical and lists in alphabetical order the descriptors and key words used in the indexing.

Each month the recipients of the index can quickly spot the documents of interest to them simply by going through the descriptors. Some institutes are already ordering about 40 documents each month in order to keep their collections up to date.

A cumulative index containing a more elaborate analysis comes out twice a year, in June and December. Raymond Aubrac, now director of FAO's Program Liaison Division, who helped to establish the center, explains: "The mere listing of entry numbers opposite the descriptors





and key words does not, in itself, help with selection of items, so we decided to produce an analytical index in which descriptors (and key words) appeared in their context, reproducing all or part of the summary composed while indexing."

Selection thus becomes a somewhat easier matter. This approach was made possible by adapting a specific information retrieval system known as KWIC (key words in context) for which pre-arranged computer programs exist.

FAO marked its 20th anniversary in 1966. Twenty years of documents had to be stored in the computer's memory banks. Specialized indexes are being produced which catalogue all of FAO's technical documents, covering such fields as forestry and fisheries.

Watching the computer at work processing one of these indexes, one sees the tape implacably consuming the subject matter at a rate that is inhumanly fast.

These indexes, bulky as telephone directories, are available to the public. They are divided into three parts: bibliographical; by author; and according to the KWIC system. They make up a complete set of references to FAO's entire work since its founding, from nutrition to land reform.

"It all seems quite simple but it has called for considerable work," says Mr. Dubois. "FAO's technical divisions have grasped its usefulness and helped us greatly by selecting and collecting documents. Sometimes, though, we had to play detective, tracking down a veteran who was hoarding the last copy of a document out of print for nearly 20 years."

Mr. Dubois was not the first to undertake this kind of search, though he may be the last. One day, when FAO was ten years old, one expert became very angry. He was studying Iraq's natural resources. He asked for documentation but received only two small pamphlets. "You are pulling my leg," he flared up. "Is this all you have learned in ten years about a country with such fantastic oil potential?"

THE NAKED BRAIN OF THE COMPUTER
An information network will some day link the continents, drawing upon the experience of major organizations and disseminating this material throughout the world

But it was impossible to find other documents for him, so he had to tour the offices one by one trying to find what he wanted. To his great surprise, he emerged from each talk with a report, a bundle of correspondence or the minutes of a meeting. The eventual pile of documentation exceeded all his hopes.

Today, all of the FAO documents dealing with a particular problem are easily available. If they have been published and are available in stock, there is no problem. If there is only one copy, it must be reproduced. To this end, the center uses micro cards, each sheet of which contains 60 pages of documents.

An international network

This is a most economical, quick and sure method of reproduction: mistakes are impossible, and dispatch by airmail is not too expensive.

Requests can be handled for positive micro cards, which can be read on a special apparatus, negative micro cards which can be reproduced at will, or photographic enlargements of the micro cards large enough for unaided reading. The center will soon store its own archives on micro cards.

"In every country, it seems quite natural to turn to the authorities to find the answer to one's problems," says Dr. Aubrac. "Aren't the ministries public services? One forgets all too often that organizations such as FAO are international public services."

"We are among those best qualified to solve rural problems. We have one of the finest libraries in this field, the most extensive documentation and a great range of specialists. Add to this the fact that we take a worldwide view of such problems. With the help of present-day technical resources, we can solve many development difficulties."

"We would like the center to become a liaison point between bilateral and multilateral aid. Bilateral aid is sometimes expended in useless efforts for lack of knowledge of what is being done elsewhere; we can help avoid this problem. But we also hope that it will be a dialogue and that, through our center, multilateral programs can profit by the experience of bilateral aid."

"We should like to forge an international network covering exchange of

technical information on the development problems of food and agriculture. It would have to include those research bodies with long experience in this field from which we have drawn inspiration: the Centre national de la recherche scientifique in France, the U.S. Department of Agriculture and the Tropical Institute in the Netherlands, to name only a few.

"On the other hand, our efforts must also be directed toward increasing the number of specialized documentation centers. Already we have helped to establish a national documentation center in Morocco which will use FAO's indexing system. Similar efforts are planned for other developing countries.

"Studies on rural development have multiplied in most countries of the third world over the past few years. In many cases the results have not been published and the original documents are in danger of being lost. It would be very useful to collect them together and to increase their usefulness," said Dr. Aubrac. "In Morocco this would involve translating the central vocabulary which has been drawn up in English to meet the documentation needs of FAO.

"But one thing is clear. In publishing our indexes, we do not want to add yet another pamphlet to the nearly 2,000 periodicals which already furnish summaries of published articles. Our aim is to explore unpublished material which generally disappears. The vanguard sectors, such as chemistry, nuclear science and molecular biology, are the only ones at present to issue indexes of unpublished documents. We think that the science of development is sufficiently important, and in such constant evolution, that it also needs this kind of treatment.

Research results confirmed

"It would meet a pressing need. For example, research has been going on in Morocco over the past 15 years on the cultivation of long-staple cotton using a sizable pilot project of 100 hectares. Excellent results have been achieved, but so far these have not been published. Scientists in the Sudan, who have been improving long-staple cotton with great success for half a century, do not know of the work of their Moroccan colleagues. As a result, two highly specialized teams have been grappling with the same prob-

lem: they could have shared the job for they are both working in similar ecological conditions."

The center recently published a document indexing agronomic research projects in eight West African countries. The document was prepared as the basis for discussion at a conference on the priorities of agronomic research for economic development in Africa, held at Abidjan in April under the sponsorship of the U.S. Academy of Sciences. These indexes enabled researchers to keep abreast of all similar projects. They confirmed not only the importance of the results obtained but also the need to continue such research work.

Great savings possible

Savings in money and effort which could be gained through general application of this method are enormous. In worldwide agronomic research, perhaps 20% is spent on duplicated work: the United States alone devotes \$400 million a year to such research.

National and international documentation centers, research stations — the elements of a world-girdling information network for agricultural development — seem complete.

It is now planned to extend indexing to documents dealing with problems of rural development and food production published by nongovernmental organizations. Here, too, valuable material, the work of specialists, is not being widely enough used and is in danger of being lost. If this project materializes, the results of work by the private sector would be integrated with the results achieved by governments.

Having pushed back the dark frontiers of disease and death, man has become aware of another human failing: his terrible isolation, the barriers preventing him from communicating with his fellow-men.

This is why our century is, above all, the century of communication. To know everything, at once — this is the aim which distinguishes ours from preceding centuries.

As the modest embryo of a giant worldwide information network for development, the FAO Documentation Center meets this most important requirement of our time.

A plea for intermediate technology



E. F. SCHUMACHER
gives his views to Geraldine Keen

**A controversial attempt
to increase
the productive capacity of
the two million villages
of the third world**

E.F. Schumacher, director of the Intermediate Technology Group Ltd., is an economic adviser to the U.K. National Coal Board. He was economic adviser to the Governments of Burma in 1962, and of India in 1966.

When you launched the Intermediate Technology Development Group in 1966, what were you aiming at? What made you feel that an intermediate technology was so important?

In my view the real problem of world poverty, and thereby the problem of development, lies in the villages — perhaps two million of them. These villages find their populations multiplying; they have not got enough land; their present farming methods are too inefficient to produce a proper livelihood. As a result, people are streaming off the land and into the towns. This, in turn, is making the towns quite unmanageable.

The high level of technology that we have developed in the west can only function if there is a town in the vicinity, and most of the aid effort has gone into such towns. This means that the people

who need aid most are simply being bypassed. Can we bring aid into the rural areas so as to stabilize this position, stop the great drift into towns, do something about unemployment and banish the specter of world hunger by raising productivity?

The moment you begin to think along these lines, you see that an appropriate technology is required, something very much simpler than the highly sophisticated technology we are using in the west. The term that we use is an intermediate technology.

What do you see this technology as being intermediate between?

It should be very much better than the nonviable technology in the rural areas of the poor countries today. At present there is a gap, a huge gap, between these traditional primitive methods and the high-level technology of modern farming.

Take, for instance, harvesting equipment. This means either the sickle or the combine harvester. What we want is to fill the gap between the two. Something better than the sickle but much easier to maintain and much sturdier than the combine harvester.

Quite a lot of work is already being done in developing countries along these lines. Do you think that you have something different to offer?

We do not want to be different. We want to tackle a particular aspect of the problem that is generally neglected. Poverty is a terrible condition, though most of us do not know very much about it. One of the drastic features of poverty is that you are cut off, out of touch, unconnected with what is going on elsewhere. There is no communication, and the same methods have to be re-invented again and again all over the world. Our main job is to tackle the problem of communication.

In India some splendid solutions have been found of an intermediate technology kind, but in Peru or, say, Tanzania, nobody knows about them — and vice versa. It is tragic to see people struggling to find solutions to quite straightforward problems, which have been solved long ago somewhere else.

Further, we have research establishments, both in the developing and in the aid-giving countries, where solutions have been found using an appropriately simple technology. But these solutions are unknown to those who need them.

How do you aim to bridge this gap?

Quite obviously we cannot communicate with two million villages directly from London. Our policy is to set up local groups in the developing countries themselves. We have groups in India, Peru and Colombia. Negotiations are going on in many other places: Pakistan, Ceylon and various African countries.

We want the local group to do two jobs: first of all, to gather information on all the positive work already going on in the country; secondly, to receive and disseminate the information that we can pass to them from London.



"What we want is to fill the gap between the two. Something better than the sickle..."

We try to feed these groups with information in an easy-reference form, like the catalogue that we have recently published called *Tools for Progress*. We are working on specialized manuals dealing with important everyday problems. At the same time we are very anxious to get from the groups a feedback of what the problems really are.

What sort of nucleus do you form in these countries? Is it round a government agency or private individuals who are doing particularly good work in the field?

If you want to achieve anything in the real world you always look for something that already exists, some growing point:

a technical university; a group of private individuals.

If you ask me for a general formula, I would say that it has got to combine the three forces of society. I call them the A,B,C forces: A stands for administration — in this case, government and international agencies; B stands for business, for industry; and C stands for the communicators, the intellectuals, the research people, universities and so on.

Setting up these groups is clearly the first step. The next, presumably, is to sift and sort out the information you receive and to issue publications which can, in turn, be used by the groups. Is Tools for Progress typical of what you are seeking to do in this direction?

I think it is. We have been talking for some time about the appropriate equipment for these two million villages. People quite naturally said to us: "Well, where is it? Has it still got to be invented? Who is manufacturing this type of equipment?"

We started with British industry and found that what we consider appropriate equipment is being produced, commercially, today. There is no need to invent it; there is no need for new designs. No one had hitherto gathered the information into a catalogue which could be easily used by people in the field to find out what they wanted.

The catalogue lists manufacturers who are producing down-to-earth equipment. It contains the names of British manufacturers who are prepared to help with the production of this type of equipment abroad, either as a joint venture or under license. Where a certain product has gone out of production in Britain, because the market for it is no longer large enough, the manufacturer has offered to make his blueprints available to anyone interested in setting up production in a developing country.

Now that you have established a base, what is your group aiming to tackle next?

We are now becoming more specialized. Our most important project is another publication dealing exclusively with low-cost building methods. There is a wide range of building methods but a

director of education, for example, who has to build 50 schools or 50 houses for teachers, has very little information to help him choose between the alternatives, particularly on really low-cost possibilities.

We are assembling a manual which will present a complete view of the alternatives that are available.

Another subject on which we are actively engaged is water supply and storage. A large number of the developing countries are arid. Water is the beginning of everything. Until this problem is tackled, no development effort can get off the ground. Here again, a great deal of knowledge exists in highly scattered form. Our aim is to bring it together into a low-cost brochure.

There are many simple possibilities which could make a very real impact at the village level. The rainwater catchment tank, for instance, has aroused great interest in Botswana. Two of them have already been built and we are negotiating at the moment to get the very simple technique involved taught in primary schools throughout the country.

The introduction of simple tools and equipment could have an immense impact on village problems but this impact can only be felt on the world level if you can reach several hundred million people in the rural sector. The task is huge. Do you see yourselves working closely with government and international agencies?

Time is getting very short. We must use every means available and must work with everyone who is prepared to work with us. The international agencies are doing excellent work, but they are large and bureaucratic. There are many things which they cannot do because it would be tactless. They cannot easily initiate action and very often must wait for the local people to ask them for help. We are extremely anxious to work with them and have so far been quite successful but we will not wait for them.

The network that is coming into being is a network of groups of individuals who really want to do something about the development problem and want to do it now.

We cannot, of course, reach two mil-

lion villages in one throw but we can reach people who are really concerned about the problem and we have to hope that there will be some snowballing effect.

We are trying to supplement our activity on the commercial side by getting people to tackle the trading aspects and also the question of credit. Credit is a major problem in poor villages and there is very little one can do about it from London. But, at least, when we get people interested in appropriate equipment we now have good banking connections who will help with the financing.

I do not think that a small private group like ourselves can solve the world's problems. But I think that through our work people are now becoming much more interested in this approach. I hope that we can persuade the big agencies to work with us. In this country there are the big money-collecting agencies like OXFAM and Freedom from Hunger. We are working very closely with them.

Charity can have an enormous impact in a small area, but there is surely a very definite limit to what it can achieve?

My answer is both yes and no. I do not believe that the problems of development are problems of money. It is more a question of giving the right kind of help and advice. You can waste an enormous amount of money on projects which are not appropriate to the conditions of poverty as they actually exist.

Let us assume that there are some two million villages that represent the real heartland of poverty today. You can establish a first-class woodworking and metal-working shop for £100. One hundred times two million is not an insuperable problem.

It is organization that is, perhaps, beyond us. It is intelligence, the application of intelligence to village problems, that is in short supply. If the advice given is the right advice and the equipment available is the appropriate equipment, then finding the money to buy it is not such a problem.

I think great mistakes are being made in being too generous. People do not value a thing so much if they have not had to work for it. You cannot assimilate any knowledge without your own effort. But the right information can be

supplied free of charge — a form of charity if you like. Our funds are very limited. Our contribution is to mobilize knowledge that already exists and make it available in the right places.

And this is the gap that you are aiming to bridge?

It is a major gap at an all-important level. Many people assume that I want to do away with all high-level technology. In fact, I am not concerned with this at all. I am concerned with the gap. Can we fill this gap? Because if we do not, then the main aid effort will continue to bypass the poorest and will not touch the rural areas except at a few points.

The scientists and research workers of the rich countries work on the problems of the rich countries. The much less numerous scientists and research



"...but much easier to maintain and much sturdier than the combine harvester"

workers of the poor countries also work on the problems of the rich countries. Only in a few special cases, often at the instigation of international agencies, do the scientists and research workers of the rich countries apply themselves to the very humble and down-to-earth problems of the poor countries.

Our principle is to set up working groups of real experts on a voluntary basis to tackle simple questions: water conservation, transport, fish drying, crafts and trades; the tools a village needs, from clothing and footwear to simple processing of agricultural products.

We want to make available detailed background information on technologies cheap enough to be of use and which can be applied on the inevitably small scale that the village economy demands. ■

Tanzania says: yes, but...

Although aid is
both needed and wanted,
the country cannot
allow itself
to become dependent
upon outside sources.
The farmer is
the key to self-reliance

by DEREK BRYCESON

Is a developing country really developing? What fields of activity are being developed? Who controls this development and who benefits from it?

Statistics, which admittedly may be quoted to illustrate almost anything, indicate that life, today, is hardly more secure or comfortable than it was ten years ago for the vast bulk of inhabitants of the underdeveloped world.

Governments of the countries making up that world are young. They lack experience of administration and adequate manpower resources for the most fundamental services as well as needed capital and skills for development. Such countries are nearly all largely dependent on agriculture for their livelihood and their development: such agriculture being an industry composed mainly of smallholder peasant farmers.

The highly developed countries generally accept that they have a moral obligation, which can, of course, also be justified on economic grounds, to assist in the development of the poorer countries of the world; and they do so to a greater or lesser extent and in varying ways.

Tanzania is one of these underdeveloped countries which we hope is developing. During the few years since our 1961 independence, we have gained some experience of the difficulties of development, of the ways to use limited resources and of how technical aid may best be used; also something of the requirements and hopes for foreign capital.

The government of Tanzania is a socialist government, dedicated to the formation of a truly socialist society with ever-rising standards of living. This is a most interesting philosophy but also a most difficult one, as our friend, Professor Dumont, has pointed out to us.

When a country is basically agricultural, the quickest and easiest way of increasing the national product is through large-scale enterprise using modern methods of production. When a government has very limited resources to instigate this development itself, even supposing that such is a proper function of a government, then it has to look outside itself, and usually outside the country, for such activity.

D.N.M. Bryceson, formerly Tanzania's Minister of Mines and Commerce and then of Health and Labor, is now Minister of Agriculture and Cooperatives.

But even if developers can be enticed in, is this really what underdeveloped countries need? Foreign capital, particularly when it is private capital, comes in seeking profits which it wishes to export. In many cases it wishes to make the profit in its own home country or even, for tax reasons, some third country, so prices and arrangements have to be adjusted accordingly.

Losing control of the economy

When taken too far, this kind of development can lead to a situation in which the government does not control the country's economy. Rather, the economy becomes controlled by interests that may, at times, find themselves in conflict with the country's own best interests. Decisions may be taken which are logical from the point of view of the enterprise concerned, but which may be damaging to the country, bringing about undesirable political and economic results.

Similarly, though to a lesser and much less obvious extent, foreign aid. We all talk about "aid without strings" and most people in both worlds, the rich and poor, pay lip service to the ideal. But how much aid is truly without either economic or political strings? There is some, it is true, and more honor to those who give it, but it is the exception rather than the rule.

In order to retain a country's independence of action it is important, when receiving or accepting aid, to balance up such aid as far as possible and also to keep the basic necessities and, wherever it can be done, the development of the country independent of it. In other words, the daily bread of the country should not rely on outside factors, only the hope of getting some butter and jam now and then.

Independence from these outside factors allows independence of national action and thus both honor and esteem. In an agricultural country, therefore, the government must enable the farmers to be providers of the daily bread.

When our first five-year development plan was laid out in 1963, great emphasis was placed on outside capital and skills to help develop all sectors of the economy. Agricultural development was divided into two categories: "transformation," meaning development using modern, usually capital-intensive, meth-

Essential facts on Tanzania

United Republic of Tanzania consists of Tanganyika and the islands of Zanzibar and Pemba. Tanganyika lies on the east coast of Africa with Uganda and Kenya to the north, the Democratic Republic of the Congo to the west and Zambia, Malawi and Mozambique to the south. Zanzibar and its sister island, Pemba, are situated in the Indian Ocean about 25 miles off the coast. Tanganyika, formerly a UN Trusteeship Territory under British administration, became independent in 1961 and was declared a republic, within the Commonwealth, in December 1962. The Zanzibar government signed an act of union with Tanganyika in April 1964, thus creating the United Republic of Tanzania.

Government: an interim constitution based on a one-party system, was introduced in 1964. The legislative organ is the unicameral National Assembly of up to 204 members. The President is elected by universal suffrage and a presidential election must be held whenever the Assembly is dissolved and new Assembly elections held. In October 1965, President Julius Nyerere was returned to power and in each constituency one of two Tanzania African National Union (TANU) members was chosen by the voters. The country is divided into seventeen regions, each with a commissioner. Chiefs wishing to hold official posts must relinquish their tribal authority.

Population: 12.12 million (est. in 1967) with an annual growth rate of 3.4%. Population density is 34.8 per square mile on the mainland and 347 per square mile on the islands (13.3 per square km., and 133 per square km. respectively).

Language: Swahili and English (both official) and a number of tribal languages.

Area: 361,800 square miles (937,062 square km.).

Land use (in square miles/square km): arable (39,900/99,750); plantations (4,100/11,619); permanent pasture (35,000/90,650); uncultivated (68,200/176,638); forested (141,500/366,485); other (73,100/189,329).

Major natural features and resources: borders on Lake Malawi (to south), Lake Tanganyika (to west) and Lake Victoria (to north). Lies partly in the savanna, partly in the tropical forest region. Diamonds, gold, tin and salt are mined.

Economic development: gross national product (GNP) was \$684.1 million in 1964: of which agriculture was responsible for \$393.8 million; mining and quarrying for \$16.5 million; manufacturing for \$24.5 million; and commerce for \$79.5 million. The Five Year Development Plan (1964-69) involves an expenditure of about £246 million (\$689 million).

Agricultural development: MAIN CROPS (production in metric tons): sisal — 221,529 (1966); sugar — 990,000 (1965); cotton lint — 67,000 (1965); coffee — 44,000 (1965); cloves — shipments worth £3,596,000 (\$10,068,800) in 1966. ANIMAL PRODUCTION: beef, veal, pork, mutton and lamb production from indigenous animals totaled 91,000 metric tons in 1965. FISHERIES PRODUCTION: fresh marketed fish totaled 25,000 metric tons in 1965; cured fish totaled 65,900 tons in 1965. FORESTRY PRODUCTION: roundwood production totaled 11,562,000 cubic meters (equivalent) in 1965.

Trade: total merchandise trade exports (1965) amounted to \$179,400,000; total merchandise trade imports (1965) amounted to \$140,100,000; total agricultural exports (1965) amounted to \$147,400,000; total agricultural imports (1965) amounted to \$18,700,000. Breakdown of agricultural exports (1965) was as follows: tea (4,288 metric tons — \$4,230,000); sisal (213,770 metric tons — \$39,989,000); cotton (2,615 metric tons — \$3,419,000); coffee (2,841 metric tons — \$24,060,000).

Finance: all banks were nationalized in 1967. Tanzania belongs to the East African Community and to the African Development Bank. Foreign aid in 1964 included \$24 million from the international agencies and \$6 million in grants and credits from the United States. Development Fund estimates for 1965-66 included \$20.7 million (United Kingdom); \$5.6 million (United States); \$7.3 million (International Development Association); \$3.6 million (other foreign sources); \$21.8 million (internal sources); and \$28 million (unsecured revenue).

Tourism: in 1965 revenue totaled approximately £2 million (\$5.6 million). Tanzania plans to spend £6 million (\$15 million) over the next few years on tourism promotion.

Communications: a network of passenger and goods road services (2,611 miles/4,204 kms.) is operated in the southern highlands providing links with Zambia and Kenya. Rail and harbor services are part of the East African Common Services Organization.



Julius Nyerere, president of the United Republic of Tanzania

(Data from the UN Yearbook — 1966; FAO Production Yearbook — 1966; FAO Trade Yearbook — 1966; FAO Yearbook of Fishery Statistics — 1966; FAO Yearbook of Forest Products — 1966; Europa Yearbook — 1966 and 1967 and the Economist's E.I.U. 1968 Report on East Africa).

ods; and "improvement," meaning development based on ameliorating the basic techniques of the peasant farmer.

It did not take us long to learn some lessons. Firstly, that capital-intensive schemes are also skill-intensive and that we were short of both commodities. Secondly, that we had grossly underestimated the capacity of the small farmer to increase his production given only the smallest of incentives and assistance. Thirdly, that foreign aid, and even more foreign capital, comes in where it chooses and not where you choose.

Need for self-reliance

We started out with great enthusiasm for planned settlement schemes, but it soon became clear that there were a number of sociological and economic factors which had not been given due weight: the return from such investment was likely to be long-term and high-risk. This is not to say that all settlement schemes are bad, for we have had some notable successes, particularly in the tobacco-growing areas; but it does show that great care must be taken. Some workers adapt themselves to such schemes better than others; a certain amount of experience is essential before large-scale expansion becomes possible; while certain crops, such as sugar, tea and tobacco, are much more suitable than others.

We learned also that our school-leaving youth looked upon agricultural work as a last resort, an occupation for the failures and the uneducated. Our school system was geared to produce good university students, whereas only 1 in 50 of those entering primary school could find a place in a university. This meant that 49 out of 50 had to re-enter an agricultural society having been alienated from that society and taught that to go back was an admission of failure.

These factors, touched upon superficially and briefly here, as well as others, have led Tanzania to readjust and reform its priorities and to form new policies. We are determined to retain our newly gained independence. This means we must be self-reliant though not, as some people have interpreted, that we no longer want aid from outside. That would be narrow, stupid and illogical. We want aid very much, in many fields, but we cannot allow ourselves to become dependent on it, either from one source

or from a whole crowd of sources.

We seek a position in which anything we really must have, that is essential for our country's and our people's well-being, we should be able to provide internally or else be able to go outside and buy.

Practically the whole burden of such self-reliance falls on our farmers, in the absence of industrialization, mining or tourism. It is the farmers' efforts which must produce our food, our clothing and our shelter. They must produce surpluses for sale abroad to provide us with foreign exchange needed for both capital and recurrent purchases. It is they also who must provide, through their savings, the local resources for local industrial development, and, through their purchasing power, the local markets catering to an increasing range of locally manufactured consumer goods.

Gradually, of course, this picture will change, gradually industry will assume a greater importance in our national economy, and, more important still, in the everyday lives of the people. Even so, a wealthy industry is one which is built on a solid base of local demand. This will mean a purchasing public in the farming sector for some time to come.

What does all this add up to? As seen in Tanzania, it means that we must concentrate on supplying the farmer with the services and incentives he needs. This means on the government side, research and extension in both crop and animal husbandry. It means organization of the transport and distribution system. It means adequate credit under proper control. It means accurate forecasting of requirements for seed, fertilizer, insecticide and their availability in the quantities and in the places required. It means assistance to the farmers' cooperative societies so that they may properly serve the farmer and their organization, so that they may act as a two-way channel of communication between farmer and government. It means storage and crop protection. It means vaccination and inoculation campaigns, disease control and eradication. It means advice and assistance on marketing and many other aids and services.

And it means, at all times, education and more education. I use the word "education" deliberately because I mean more than just explanation, although explanation is very important in itself as part of the education process.

It is not simply the farmers who need educating but also government. Far too many people working in, and for, governments are unrealistic and impractical. Too often they lie comfortable and snug in their central cocoon, too ready to solve problems on paper without asking advice from those who have experienced the problems at firsthand. This applies perhaps even more to the U.N. agencies because their headquarters are even further from the reality of the field than most central governments. Education must be a two-way traffic of information.

It is important that technical aid should be aimed at increasing the receiving country's capacity for self-reliance. Many underdeveloped countries, like ourselves, accept aid which creates a situation in which continuing aid is necessary for the furtherance of a particular project.

Often we overestimate our capacity to undertake certain tasks within a given time. Sometimes this is a financial failing but, more often, it is manpower shortage which is the missing factor. Aiding countries would do well to insist on on-the-job training so that the receiving country is more likely to be able to carry on a project after the aid comes to an end.

Tragic waste of effort

This applies to personnel as well as projects: there should be a training element in all technical aid posts as far as possible. This would ensure that a country continues to have a particular job done by local staff after the aid assignment is completed.

Often, technical assistance experts do not stay for more than a two-year period. This is long enough, though, for some jobs and, in any case, is enough to allow national counterparts to be trained so long as they have enthusiasm and requisite basic knowledge. Too often experts come, drift along without proper guidance or a specific assignment, and leave with no follow-up.

There is little enough of the rich world's resources devoted to the assistance of the underdeveloped world; it is tragic to see so much of it go to waste. Such funds would often be far more effective if they were made available to the underdeveloped country on a much freer basis. Aiding countries like to use their own personnel and their own equipment. They like to be able to clearly

identify the project which they are helping. This can lead to much wasting of valuable time and effort in the kind of situation which is present in most underdeveloped countries.

The delays that often result are frustrating and, because of the changed circumstances, can render the original scheme less effective. Unfortunately, only too often the government of the underdeveloped country involved is as much, or even more, to blame for waste and delays. It seems to be in the nature of

we try to reach the majority of our farmers, to teach them new and improved methods and to introduce them to new varieties and new crops. They provide the channel for credit, both crop loans and longer-term credit. The farmer markets his crop through his society and the society is in the best position to ensure repayment of outstanding debts.

Here, too, farmers can meet together and learn to manage their own affairs on a collective basis. Individually, of course, they may have been their own managers

Tanzania is now beginning to clarify itself. Our job is now mainly teaching: teaching government officials in the Divisions of Agriculture and Cooperatives and Community Development the fundamental concepts of cooperation and how to stimulate and assist the cooperative movement. We teach the workers in the cooperatives, the managers, treasurers and secretaries, to be more diligent and efficient at their jobs. We teach the committee members how they should guide the progress of their society and



Tanzania's economy rests upon agriculture. From left to right: pulping coffee; harvesting paddy; and growing tomatoes

governments, democratic ones anyway, that they are unable to take decisions in a hurry. While the reasons for this can be well understood, it does not make the whole exercise any less frustrating to eager officials.

In Tanzania's Ministry of Agriculture and Cooperatives, we have always tried to identify and spell out the job that an expert from outside should be doing. At the same time, it is important not to tie him too closely within tightly defined terms of reference, unless the job is very specific — not often the case in our situation.

One of the most important aids to agricultural development is the assistance that can be channeled to the small farmer through the cooperative society. These societies are the basis of Tanzania's development program. Through them

for years but, during this time, they may have been very largely at the mercy of dishonest and unscrupulous traders.

The cooperative is the organization through which the farmer may invest. The building up of his financial reserves by payment of cess or levy could lead to primary processing of his crop, later to more sophisticated investments.

We can show good examples in Tanzania of very successful cooperative development and of failures. The successful ones are generally those which have built upward from the farmers themselves. Where they have failed it is usually possible to trace this back to the formation of a top-heavy society led by some enthusiastic but misguided leader.

After having had to take some rather drastic action last year, the situation in

look after the interests of their fellow farmers who elected them. We teach the small farmer what a cooperative should be and how it can help him.

This is quite a job. Luckily it is not necessary in the case of all societies, but the job is urgent and sufficiently widespread to mean that all our resources are stretched to the limit. As each society becomes stronger and more efficient we try to expand its activities into more and different fields: from marketing, transport, storage, processing, provision of credit and simple farming requirements to the sophisticated cooperative.

This is the development path that we have chosen, for we believe that it can fulfill our aim of creating a society in which there is equal opportunity for all and a fair return for labor. ■

Low incomes in the high Sierras

**A young Dutch agronomist helps
to introduce fertilizer
to Ecuadorian subsistence farmers
as a short-cut
to higher crop yields
and cash returns**

by FLORITA BOTTS

More than half of Ecuador's five million people struggle for an existence on the bare, high slopes of the Sierra region.

These highlands are occupied by people of pure, or nearly pure, Indian ancestry, speaking Quechua, language of the Incas, and living in a subsistence economy.

So great is the pressure for land that potato and maize-growing are carried on up to 4,000 meters. Higher still, sheep graze the grass-covered slopes.

It is a paradox that people are so numerous and land is so scarce in this mountain region while, in the fertile coastal belt, there is plenty of land but little labor to produce the cocoa, coffee, bananas and rice which, together with sugarcane and balsa wood, make up Ecuador's main exports.

More food is needed to sustain the Sierra people, according to the Andean Mission, a national rural development agency, who have plumped for fertilizer as the quickest way to increase agricultural production.

Over the past five years some 4,000 fertilizer demonstrations and trials have been carried out in the Sierras by FAO's fertilizer program working with the Mission.

Annet van Helsdingen is a tall, well-built Dutch girl who would draw whistles any time she walked down Amsterdam's Kalverstraat. Annet, whose swirl of blond hair bestows a marked resemblance to 'Ceres' herself (see page 66 of this issue), was born in Indonesia 26 years ago. She was trained in horticulture at Rijswijk, Netherlands, and previously worked as a Dutch volunteer in Colombia. She was brought up on a farm and gets on very well with the Ecuadorian farmers.





Farmers are canny folk the world over and must be convinced that what they are doing will help them and not a distant politician, local traders or officials.

The first step (*below*) is for Annet to talk to the villagers before the land is sown or fertilized and to get one of the farmers to allow part of his land to be used for a village demonstration.

Individual holdings are small and these farmers have been encouraged by the extension workers to form their own club where they can discuss mutual problems.



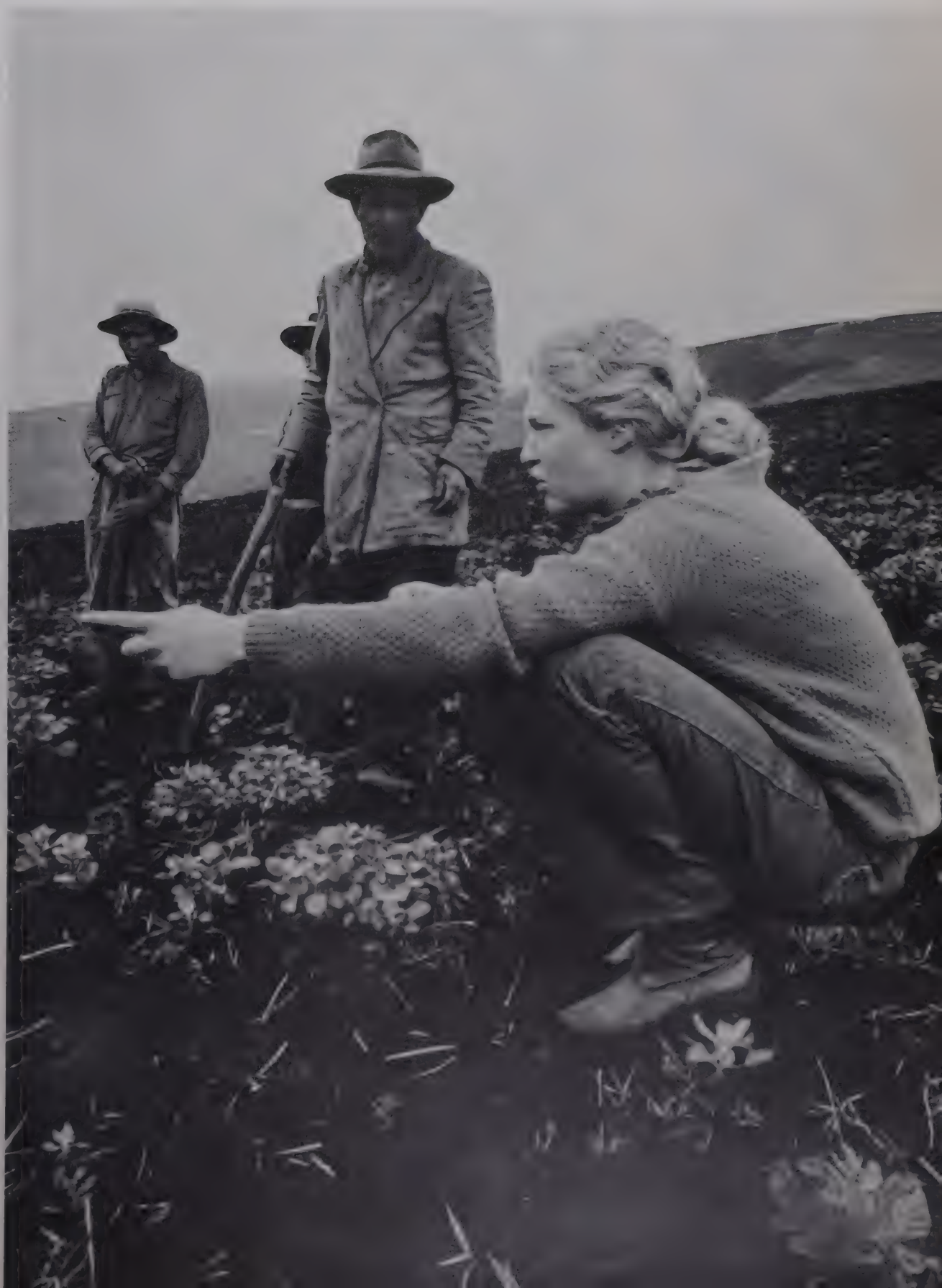


Gaining the confidence of the farmer's wife is almost as important as winning over the husband.

Social workers like the one talking to Annet (*above left*) teach the villagers everything from chicken-raising to school gardens in efforts to increase and diversify the kinds of food grown and eaten by the family.

Some of the fields are a long way from the village and fertilizer has to be brought in by donkey. This area (*above center*) is 3,500 meters up in the highlands: fertilizer, originally shipped to Ecuador from a donor country, is provided for these demonstrations by the Freedom from Hunger Campaign program; improved seed is loaned to the farmer by the Andean Mission, the cost being repayable out of proceeds from the harvest.

Annet and an Ecuadorian co-worker (*above right*) explain to the farmers and their families what fertilizer is all about. Fertilizer is not a magic formula. Annet explains (*right*) that fertilizer needs the right amount of moisture to act properly, and that it works best if used together with proper cultivation of the soil, improved seeds and insecticides and pesticides to guard the growing crops.





Results in Ecuador have been promising: a 50 to 100% increase in crop yields on the average, corresponding to an additional cash return to the farmer of twice the cost of his investment in fertilizer.

Through this program the farmers have learned the value of fertilizer and the need for new and improved methods and techniques, like the farmer (above) learning to use a fertilizer and seed spreader.

The next step is to make sure that fertilizer is available. So far, fertilizer of uneven quality is on sale only at the larger villages. The program is about to enter its second stage with the start of pilot schemes in which good fertilizer will be distributed on credit through cooperative organizations, which will also assure a market for the farmers' produce.



From isolation to unity

The
achievement of
the Chilean farmer

by **JACQUES CHONCHOL**



One of the basic problems facing the developing countries throughout the world today is the need to accelerate production of food and other agricultural commodities in order to meet the rising demands of their domestic markets.

Jacques Chonchol Chait is executive vice-president of Chile's National Institute for Livestock Development. He has written several books on land reform and economic development in Latin America including El Desarrollo Económico de América Latina y la Reforma Agraria.

The rapid population increase (due to extremely high birth rates and fast diminishing death rates), the chronic and often acute undernourishment of large sections of the population, the improvement in per caput income (thanks to the expansion of industrial and other income-earning activities) and the rising expectation of the masses for improvement of their living standards (resulting from the widely publicized image of the industrialized countries) all combine together to create a pressing need for the less de-

veloped countries to speed up their economic development

This requires a swift and steady increase in their agricultural output, partly for export to foreign markets, in order to enlarge their prospects on the world market, but primarily for their own domestic markets where there is a real and growing need.

All kinds of policies have been designed and promoted to deal with this situation in the developing countries, ranging from birth control (which encounters serious resistance in many of the world's less developed countries) to technical improvement schemes, farmers' economic incentives, redistribution of production resources through land reform programs, wider extension of agricultural credit to new sectors of the economy and improved supplies of modern agricultural inputs (fertilizers, improved seed, pesticides, machinery and equipment), etc.

Nevertheless, the results show that a vast distance lies between what the technicians of the developing countries, using all the international aid they receive, are capable of accomplishing in the laboratory and at the experimental station or pilot demonstration farm level and what the farm population, as a whole, in these countries can do to raise its output, productivity and living standards.

Even with the aid of everything that has been proposed in recent years — planning techniques, project evaluation, modern technical training methods, pure and applied scientific research — the results, from the standpoint of overall impact on agricultural production, have been slight.

This is because the aspect which is most probably essential to success — *the motivation, mobilization and organization of the broad mass of the farm population toward a dynamic approach to agricultural progress* — has been relegated to a position of minor significance. This is apparent even in organizations bearing worldwide responsibility for the progress and production of the agricultural population, such as FAO, which treats this very marginally. And this shortcoming is even more marked in many developing countries where the problem area is not dealt with by ministries of agriculture, development organizations or those responsible for the allocation of investment funds.

There are several reasons for this situation. Those who draw up development programs frequently seem to believe in the existence of a sort of automatic response between the amount of investment and the quantity of production, as though the economic system operated without the presence of a large number of people from widespread geographic locations, cultures and social and economic spheres who ultimately determine the nature of the relation between investment and production.

Another, often unconscious, cause lies in the attempt to draw similarities between the industrial form of progress, which may be concentrated in a few

lems, especially in view of the shortage of qualified personnel and of the many economic drawbacks in the developing countries.

Until special emphasis is given, at the international level and in the developing countries, to the ways and means of organizing and promoting, of motivating, mobilizing and training the broad farm masses, the present sharp disparity between the technical possibilities for speedy modernization of agriculture and increasing agricultural output, and practical achievements, will persist, regardless of the progress made in applied scientific research and planning techniques and the abundance of financial resources for investment.

This is the great challenge confronting all those concerned with the rapid agricultural progress of the developing countries (politicians, economists, sociologists, engineers and other technicians). Unless it is met, it will be very difficult to make quicker progress in the next few years than has been made so far.

Taking this as a working assumption, we might suggest some ideas which Chile, a country in urgent need of speeding up its agricultural growth rate, has recently been trying to put into practice.

Little contact with the farmers

The proportion of the farm population of Chile's total population of 9 million is comparatively small, about 25%. In 1964, this farm population consisted of 350,000 families, accounting for just over 2 million people distributed roughly in the following groups: about 30,000 families were large- and medium-scale producers; about 7,000 families were employed by them as administrators or technicians; about 60,000 families were self-employed family farm producers; some 80,000 families were small-scale farmers, partly living in communities and partly independently, but all self-employed, supplementing their own farm production by doing extra jobs to make a bare living; another 30,000 families were tenant farmers; and about 140,000 families were wage earners of various types, usually employed by the large- and medium-scale landowners.

In Chile, the first problem arising when the land reform process was begun in 1965 was the physical impossi-



OWNING THE LAND IS NOT ENOUGH
At the time of land reform 98% of the Chilean farmers had practically no form of organization

large production units in any country, and the agricultural form of progress. In the latter, operations must be performed by thousands of production units geographically spread over a vast territorial area, usually lacking communication facilities, in each of which are people who tend to work independently. In such cases, the final result depends on the coordination and uniform reaction of all these people.

The mere process of communicating production targets and of assigning the means for meeting these targets to these people raises remarkably complex prob-

bility of even establishing contact with these large farm masses which were supposed to be the subject of the reform.

Up to that time, the only organized groups consisted of the large landowners belonging to agricultural associations. These were actually social and economic pressure groups influencing the state authorities and the rest of the farmers. Traditionally, they considered themselves the legitimate representatives of the country's agricultural interests.

Three motivating forces

Yet, despite its power and influence, this type of organization included less than 2% of the country's rural families. The other 98%, particularly the large mass of agricultural wage earners and small independent farmers, had practically no form of organization, although the existing laws theoretically provided possibilities for the establishment and operation of agricultural workers' unions and farmers' cooperatives.

These conditions led to the need to seek simple, rapid methods to promote the accelerated organization of the farm sector and to endow it with the resources and ability to play a dynamic role in the progress of the nation as a whole. This was an indispensable first step toward arousing an awareness of progress.

This farm population had an illiteracy rate of over 50% in some areas and average literacy ranged between 30 and 40%. Also, the isolated way of life and cultural values imposed by the dominant members of society fostered an attitude of profound individualism. It was found to be impossible to motivate organization of the farmers by abstract concepts of the advantages of mutual aid and solidarity, cooperative action, or farmer participation in the social power structure through organizations, etc. Therefore, it was essential to discover some simple, concrete ideas that could be readily grasped by the masses and would encourage them to organize, allowing, of course, for the specific situation of each farmer group.

Under the conditions existing in Chile, these motivations took the following forms: for wage earners — the organization of a union as an instrument of claims to social rights (better wages and working conditions, due observance of

the social legislation for the protection of farmers, which the laws guaranteed but which were seldom respected in practice); for the small independent farmers — credit facilities (membership in a small farmers' committee or a farm cooperative was established as a basic condition for loan eligibility under the programs for extending credit to these sectors); and, for both these groups — opportunities for obtaining cheaper provisions of their main consumer goods (through the organization of consumer cooperatives capable of supplying their members at lower cost than the traditional traders in the rural areas).

These three ideas: labor union demands; access to credit formerly unobtainable for lack of the traditional security required by the banking system; and cheaper consumer goods, proved to be simple enough and easily grasped by the farm masses. They were quickly organized, in only three years, into basic rank-and-file associations composed of families (between 20 and 200 families in each).

This first phase of organization has, itself, led to another advantage: the establishment of a milieu from which new farm leaders can arise. In the traditional, unorganized and individualistic community there were no such leaders because their emergence was physically impossible. The only leaders were the dignitaries (the large landowner, the local trader and the most highly educated person) who, as a rule, based their power and leadership on exploitation of the farm masses because they had greater opportunities for communication with the rest of the country's economic, social and political structure (the authorities, the banking system, wholesalers, members of parliament, etc.).

Emergence of new leaders

Thus, as these new basic community groups began to organize (cooperatives, labor unions, small farmers' committees, etc.), it became immediately possible for new leaders, more genuinely representing the farm masses, to emerge and become capable of replacing the traditional leaders.

But, obviously, if the process of organization and social mobilization were to stop at this level it could not be consoli-

dated, and there might even be the possibility of its backsliding to the former situation. In fact, in many of these base organizations which have suddenly sprung up there is a real risk that, as the first obstacles arise, their members may become discouraged and prefer to go back to the traditional system.

A climate of discouragement can arise: if the unions have difficulty, for whatever reason, in fulfilling the hopes their members have placed in them; if some of the business operations of the consumer cooperatives fail, due to their managers' lack of experience or attempts at boycotting by local traders; or if the credit or supplies of inputs the small farmers hope to obtain through their committees are delayed, or only partly forthcoming. The more pessimistic members, or those who are more traditionally minded, tend to spread their gloom and there is a risk that the entire organization may be undermined.

Need for training

Along with the organization process, immediately following the formation of the base organizations, there must be a large-scale training program for the new leaders and the farmer rank and file to arouse them to growing awareness of the significance of their organization, the inevitable difficulties in making a start, how to overcome them, the requirements for the organization to move forward, and the long-term advantages it can afford as it grows stronger.

This training effort can be implemented through a combination of media: short and frequently repeated courses for leaders and rank-and-file members; audiovisual methods; illustrated manuals; farmers' publications and radio programs. At first, the approach should be primarily social and economic, rather than purely technical. The new leaders must quickly learn the meaning of a union or cooperative: how to manage them, and their possibilities of action within the framework, or outside, of the existing legislation; the farmers' position in traditional agrarian society and what they must do to emerge from it; the country's real agricultural possibilities, etc.

While this is necessary for the leaders, it also applies to the rank and

file. It is absolutely indispensable to concentrate a substantial amount of resources for several years on this program, especially human resources. It will call for imagination to find these resources and to teach training personnel as soon as possible. It is worth mentioning that in all developing countries a fairly large number of people can be found who, with a little additional instruction, are capable of doing this work. They are usually without university degrees or special diplomas, while many of them may well come from the farm communities themselves.

The need for a new step forward automatically arises as this training effort enables the base organization to become firmly established. This involves a transition to farm organization at a second and higher stage, capable of forming socially influential and economically effective units. The basic farmers' organizations, after all, consist of a small number of families which are not often in a position to provide positive solutions to social and economic questions indispensable to rapid agricultural progress.

Danger of dependency

A few examples may serve as illustration. In the case of unions, collective bargaining at the level of one or a few farms is often impossible, and even undesirable. It must be conducted at the regional level, requiring a federation of unions capable of representing all the farmers of the region. As for the small farmers, as they begin to improve and increase their output they automatically encounter new problems which did not occur when they were marginal subsistence farmers. By this time they need modern equipment at low cost; they must have a marketing infrastructure which allows them to provide their own financing and to keep part of their production, without being forced to deliver it to the nearest trader the day after the harvest, or to pledge it even before the harvest is in.

All these requirements mean that the small farmer needs a group of services — sometimes even facilities for industrialization (milk processing plants, silos, concentrated feed plants, dehydrating equipment, oil extraction equipment, etc.)

— which are economically impracticable at the small cooperative level, and which place those who control them in a position to determine the rules and the profit margins of agricultural trade.

Thus, as agriculture becomes modernized and more complex, and unless farm organizations take care, it will, sooner or later, become dependent on, or controlled by, those who dominate the important technical and economic factors.

Taking part in development

State intervention, because of lack of resources, administrative problems or overbureaucratic red tape, may not always be able to adequately help the organizations in dealing with these new situations. Therefore, the farmers, without losing social and human contact with those immediately surrounding them (which can be maintained through their base organization), are obliged by the greater complexity of the development process itself to favor the ramification and extension of farm organizations to a second and third stage (through their vertical and horizontal integration covering many more farmers and activities). If they do not they will soon be deprived of any benefits they may have gained in the initial phase. Certainly, this is one of the vital problems confronting the new farm system of technical progress and development emerging in the land reform process in Chile, as in other countries committed to similar methods.

The rank-and-file farmers' groups (unions, cooperatives, small farmers' committees, settlement committees, women's and youth organizations, neighborhood boards, etc.), composed of comparatively small numbers of families living and working in the same geographic area who are all personally acquainted, provide a basic point of departure for the application of the development plans and programs the planners may design in keeping with the country's needs.

Naturally, these plans and programs will never be more than a set of good intentions or documents to satisfy the intellectual concern of the planners and the international organizations, and will not have concrete, effective impact on the country's conditions, unless these

groups participate both in the establishment and, particularly, in the execution of such plans and programs.

The existence of these farmers' groups offers, first and foremost, the major advantage of greatly simplifying contact between the managerial personnel of the development process and the broad mass of farmers. Certainly it is much easier to discuss and agree on action with one, two, three, four or five thousand farmers' groups than with several hundreds of thousands of individual farmers.

Secondly, as the base group itself develops its awareness of its significance as a group, of what it can accomplish and of what is available to it (in terms of resources), as compared to what each member possesses and can do as an isolated individual, this awareness changes the farmers' traditionally passive attitude into a far more dynamic approach enabling them to engage in the solutions of some of the most immediate problems weighing on the communities to which they belong.

In Chile, for instance, one of the typical problems of the small farmers was their physical isolation. Although the main highways and secondary roads are rather good, the third-class or smaller roads (giving many small farm communities access to the urban centers) are deplorable. Farmers are completely cut off during certain periods of the year when the rains make these roads absolutely unfit for transit. The farmers' attitude was traditionally expressed in requests, through members of parliament and local representatives of the central government, that such roads be built, repaired and maintained.

Joining in government efforts

Naturally, since the government's economic and technical resources were small, progress was extremely slow and the main efforts continued to be concentrated on the principal highways and secondary roads. Meanwhile, the farmers continued to wait for the state authorities to solve the problem for them, without shaking off their passive attitude.

However, they soon realized, through their base organizations, the economic limitations of the central government, but that it could, nevertheless, increase its capacity for action considerably by

making agreements with the various farm organizations. By agreement, the government would supply heavy equipment while the farm organizations would provide free labor (when not otherwise employed in farm work) and materials (rubble, sand, etc.).

As a result, the number of small, new or improved country roads, linking the farm communities with the main road network, increased remarkably quickly: and this work was accomplished at a cost to the national budget which was in keeping with the limited funds available to the government for this item.

The roads, which were the most pressing necessity, marked only the beginning. The effort was extended to other services: construction of schools and health centers; irrigation and drainage installations; airstrips for small planes; commodity storage facilities, recreation and community centers, etc.

Strategy of action

All these achievements show that an accelerating dynamic movement toward the development process can be set off in the rank-and-file farmers' organizations by a kind of cumulative chain of cause and effect. Progress is impossible without these organized and motivated groups.

Another great advantage of group organization is that it enables the farmers to participate in the establishment of development plans: the base groups and the representatives of the government can jointly analyze the farmers' problems, expectations, resources, possible new uses of these resources, the requirements for meeting these needs, and what the groups themselves can contribute to development carried out for their benefit — all in a spirit of action rather than in an abstract way. Plans and programs can then be designed: not only as broad overall national objectives, but as much more realistic goals based on a region-by-region and community-by-community analysis of available resources, existing problems, the minimum requirements and most appropriate forms of action.

Efficient operational plans and programs can be drawn up in this way which are based on the real conditions of the country's various regions and human

population groups and its available economic and technical resources, etc. A strategy of action can be established which allows the plans to be applied in concrete form and adapted to actual conditions.

At the same time, such participation by the base community, in the determination of both national and community objectives within the overall plan,



SHARING THE DECISIONS
In only three years farmers' organizations were created composed of between 20 and 200 families per unit

creates a psychological commitment that forcefully motivates these groups to play an active part in meeting the challenge.

Chile's experience in 1967, in promoting encounters between farm base organizations and the various state services (agriculture, health, education, communications, etc.) has proved remarkable not only from the standpoint of helping the farmers' organizations to mature, in their awareness of their responsibility toward the development process, but because it has also enabled many of the state services to define their work objectives on the basis of a better knowledge of the real farm situation.

An indispensable condition for continuing the action we have described is

a clear social consciousness and a high degree of commitment by the managerial and technical personnel guiding the program (meaning not only the increase in per caput income, but also its redistribution among the population as a whole).

These personnel members must be willing to break with many of the traditional society's values, social and economic relationships and forms of operation. Such an attitude means, of course, that there will be a more or less violent conflict between them (depending on their power and attitude to the change) and the influential members and leaders of the traditional society, especially in the rural areas where the latter groups are the strongest and most conservative.

Unquestionably, the large landowners, the traders (who lived and prospered by exploiting the farmers through both their sales and purchases) and the dignitaries of the local community (who acted as the mediators between the farmers and the authorities and other institutions of urban society, and based their power and influence on this mediating capacity) will oppose any change in the social, economic, and even the technical *status quo*, insofar as it will signify a loss of their power and influence. And all these groups of dignitaries will fight with every weapon at their command against those promoting change, including, of course, the state authorities.

The state must, therefore, have personnel for the promotion of change who are not committed to the traditional power structure. These people can only emerge from the younger generation, whether professionally or technically trained or simply gifted with an ability for social leadership. An entire strategy must be defined, in terms of the conditions of each country, to solve this problem (ranging from the discovery of people who can constitute the personnel to lead the process of change, to training them and instilling in them an action mystique).

This is a basic problem for the developing countries to solve if it is hoped to organize and raise the status of the farm populations which, in turn, appears to be an indispensable condition for speeding up development, achieving a permanent increase in agricultural production, effecting a more equitable redistribution of its benefits and modernizing society.

White collar research - a luxury

**Rejecting the alternative
of 'basic'
or 'applied' research,
the author proposes
a middle way
— 'meaningful' research containing
both sociological
and technological aspects
and aimed directly
at regional problems**

by WILLIAM PAYNE

The situation of animal production research in the tropics today is somewhat confused. In some respects there has been retrogression, in others progress. Everywhere there are hopes, dreams and plans.

In general, expatriate staff have withdrawn from tropical research centers and have not yet been replaced by equally well-trained locally recruited staff. Some centers have been closed as a consequence, others are operating on a 'care and maintenance' basis while, at others, new projects are being developed with the assistance of multilateral, bilateral or private aid agencies.

New methods of organizing animal production research in tropical countries must emerge during the next decade. If these are to be inherently sound and are to assist such countries to develop their livestock production, it is important that all possibilities should be freely debated and examined and that policy should not necessarily be based on attitudes inherited from the past.

In many tropical countries research facilities were first provided by the former colonial powers, either at special government stations or at the new universities. Private industry or foundations were the donors in a limited number of tropical countries, while there were a very small number of regional research schemes, such as at Turrialba, Costa Rica, and at Muguga, Kenya.

Generally these facilities were limited in scale and concept. There was little

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cooperation among different centers, or between research workers and producers in the countries concerned. Often, particularly in Africa and Asia, the major effort was concentrated on the control of endemic diseases, so that only minor progress was made in seeking solutions to production problems.

Nevertheless, useful results were achieved. Many endemic diseases were brought under control; indigenous breeds were differentiated; and an effort was made to select for productivity within these breeds. Useful information was acquired on the effect of environment, particularly climatic environment, on animal productivity; and a start was made in selecting suitable forage species for different tropical environments and in studying how these could best be used.

The need for greater emphasis on training at all levels has now become very obvious.

In the past, expatriate research staff and many laboratory technicians were trained outside the country. The small number of locally recruited staff who received professional training were usually granted fellowships to study abroad.

This situation has created many problems for administrators concerned with the organization of training programs. At present, there is an overemphasis on the value of academic training and the acquirement of diplomas and degrees rather than skills. At the same time, academically trained personnel have a strong bias in favor of participating in research rather than in teaching or extension work; they consider that research is a more prestigious occupation.

Overseas training has acquired a snob value that is difficult to counter, or to eradicate. It seems to be fashionable today for the young graduate to have received some academic training overseas.

The majority of multilateral and bilateral aid schemes cater to this attitude by providing overseas fellowships; competition remains acute while the authority to recommend overseas training constitutes a subtle form of patronage that is willingly exercised. Most researchers are eager to accept overseas fellowships, whether or not they have any intention of using their training once they return.

There is one other difficulty which arises when biologists or agriculturists

receive postgraduate training overseas: such training usually takes place in an alien environment so that, only too often, the experimental work has little relevance to the work carried out in the national environment.

The need for greater emphasis on training at all levels has now become very obvious. It is necessary to encourage and support training schemes in tropical countries so that adequate personnel can be provided at all levels in the future. It is also essential to assist research centers to recommence, improve and expand their programs by providing expert as-

cooperation between, and often a minimum of cooperation within, aid organizations in planning the allocation of resources for research purposes.

Requirements for 'meaningful' research programs on a national and on an international scale should be urgently examined so that resources can be allocated on a more rational basis.

What is meant by 'meaningful' research? All too often research is rather facetiously divided into two categories, 'basic' and 'applied.' At present it is fashionable to suggest that any research carried out in a developing country must be capable



"My uncle's right, there's a future in research"

sistance, equipment and supplies.

It is generally believed that the very existence of research institutes or organizations endows prestige on the country in which they are sited. Thus, applications for the provision or strengthening of research organizations multiply at a prodigious rate.

The number of such schemes which are operational or under consideration by multilateral, bilateral and private aid organizations is very considerable. The United Nations Development Program has already approved approximately 58 projects, costing \$50 million, in the fields of forage, animal production and animal health training and research. It is difficult to estimate what part of this total sum will be spent on research but it cannot be less than \$20 million.

Unfortunately, at present there is little

of immediate application and be 'economically orientated,' whatever the latter term may mean. It is often categorically stated that developing countries should not engage in 'basic' but only 'applied' research: because 'basic' research is too costly; because such countries do not possess the necessary resources; or because the research can be more advantageously conducted in economically advanced countries.

This is tantamount to suggesting that developing countries should not think about basic problems of animal production but should concentrate their attention on applying knowledge acquired in completely different and alien environments. The disastrous consequences of these attitudes are already apparent. Government agencies and new universities equipped to carry out control, extension

or teaching functions are encouraged to engage in short-term, so-called 'applied', research that is sometimes meaningless and all too often a complete waste of effort and funds.

The terms 'basic' and 'applied' should be discarded and the developing countries should be encouraged to undertake 'meaningful' research that might include problems formerly categorized under either heading. Research should be directly related, and ultimately applicable in practice, to the animal production problems of the country.

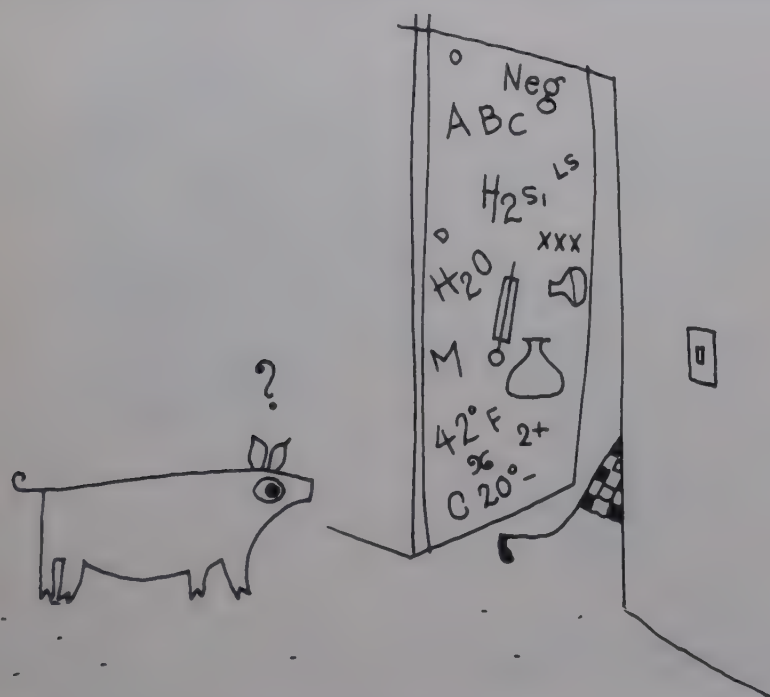
This suggests that 'meaningful' research

contemporary society, and to make rational guesses as to what motivations will arise within one or two generations.

Examples of mistakes made due to a lack of appropriate sociological knowledge can be multiplied indefinitely. When long-term livestock breeding programs are organized, it is absolutely essential to select for the type of livestock that producers will wish to raise, and that will produce the type of livestock products that consumers will wish to purchase.

It is of little use selecting for single-purpose cattle, however productive they

buffalo indigenous to the country, the idea being to provide the farmer with a larger and more powerful work animal that will also produce more milk. Though the upgraded animal can undoubtedly work longer hours and produce more milk, it has never been accepted by the farmer; the indigenous water buffalo is smaller and therefore cheaper to feed, it is capable of carrying out the work on existing holdings (which have probably decreased in average size during the last fifty years), and it produces all the milk that the farmer requires (in the absence of milk collection schemes that would



"He's got me a grant and bought me my ticket"



"I've spent many long months cramming for my exams"

has both a sociological and a technical content: that the most brilliant and successful technical research will not be exploited to its fullest advantage unless it is sociologically acceptable; and that sociological research should precede, or be conducted together with, technical research.

Case of the water buffalo

Sociological studies are needed to keep the animal production scientists informed about what new practices the farming population will accept, not only immediately but — in view of the long-term nature of so much animal production research — for several decades ahead.

It is necessary to know something of the motivations of producers within

may be, if producers will eventually require a double- or triple-purpose animal. Similarly it is no use selecting for a type of animal that fattens rapidly at an early age if consumer demand points toward lean meat.

Improving the growth rate and the size of most farm livestock appears to be an obvious aim to most animal breeders and administrators. However, unless farm size and farm organization are radically altered, large animals may become uneconomic on small farms and the farmer may not be able to produce or purchase the feedingstuffs required to take advantage of the growth potential of the improved livestock.

During the last fifty years in the Philippines, the authorities have imported many Murrah buffalo bulls from India in order to upgrade the smaller water

make the production and sale of milk a viable enterprise).

Even if land reform and consolidation were instituted, so that the average size of holdings radically increased during the next decade, there might still be no place on the farms for an upgraded water buffalo: the farmers might decide to mechanize.

Thus the sociologist has a very important role to play in 'meaningful' animal production research. It is not suggested that all research should be tailored to ensure that it fits in with the sociologist's concept of what is, or what will be, acceptable to the farming community. Technological changes based on research findings may occasionally alter the whole basis of rural society. What is suggested is that the sociologist should be an integral member of any research team and that

sociological data should be evaluated before decisions are made as to the form, content and direction of any major animal production research program.

Animal husbandry is an integrated subject embracing many scientific disciplines; therefore, 'meaningful' animal production research must be based on an integrated approach. So often in the past, short-term experimentation by biochemists, nutritionists, physiologists, animal breeders and parasitologists has been considered a substitute for an integrated research effort, simply because it was easier and cheaper to conduct. Unfortunately this

farmer in a humid topical environment where there has been no tradition of dairy farming must know whether he should manage his dairy cattle indoors or outdoors. Once a decision has been made this will guide the whole pattern of his investment, his managerial methods and the type of dairy cattle that he breeds.

At the present time nobody can advise him as to which is the most suitable system. This can only be decided by large-scale integrated animal husbandry experimental work conducted simultaneously at several different centers.

Is this 'basic' or 'applied' research? It

istrators think in terms of up to five years' assistance and a relatively small allocation of facilities for a very large number of so-called research centers that will concentrate on short-term 'applied' programs.

New tropical research centers

There are three major environments in the tropics: humid; arid or semiarid; and montane or medium-to-high altitude. Within these three major types there are many microenvironments.

The aid organizations, multilateral, bilateral and private, should cooperate to support and adequately finance six to nine major animal production research centers in the tropical world, two or three in each of the main environments.

These centers could concentrate on evaluating the effect of soil-plant-animal interactions in their environment in order to find out the most economic and productive managerial systems for all classes of livestock.

They would have to be interdisciplinary institutes employing first-class scientists enjoying exceptional research facilities of a quality and magnitude that could not be provided at small animal production research centers, or university departments of animal production.

These specially selected centers should act as training grounds for animal production scientists from all developing countries in the region, and should form part of a first-class university. Scientific staff from smaller centers could be offered postdoctoral fellowships at the larger ones.

These major centers should maintain contact with all animal production research in their ecological region. They should organize and assist in cooperative experiments so that new ideas and methods evolving from their research programs could be simultaneously tested in a variety of microenvironments.

The value of major research centers of this type would be inestimable. It is likely that they can only be established if the Food and Agriculture Organization is willing to take the lead and persuade all aid organizations to cooperate in an overall world animal production research program.



"At last, I'm on my way home: doctor of ORNITHOLOGY"

splintered approach to animal production research problems is sometimes encouraged by vested interests in specific scientific disciplines; also by the emphasis that aid administrators place on 'applied' research which, rightly or wrongly, is associated with the idea of short-term, immediate-utility research.

There is considerable confusion in defining the requirements for increasing livestock productivity. There must be adequate incentives for the farmer, a suitable infrastructure, available credit and an efficient marketing system. The farmer must be able to educate himself in the necessary managerial skills and be advised by a knowledgeable extension service.

Research is required to chart the course along which the extension service should guide the farmer. For example, a dairy

is certainly 'meaningful' research. Such research has not yet been carried out, and is not likely to be carried out given the present situation, because work of this type requires the cooperation of many specialists, the use of large numbers of dairy cattle and extensive facilities.

Or again, we know that under good management in the humid tropics a three-quarter bred temperate x tropical type dairy cow is likely to be the most productive animal to use, whereas in other areas where management is not so good a half-bred temperate x tropical cow would be the most suitable type. Are we attempting to breed stabilized crosses of this type? The answer is generally no, because this would require large numbers of cattle, very large and expensive facilities and, perhaps, twenty years of breeding work. Aid admin-

UNCTAD 2

- success or failure?

The outcome depends on the lessons that are learned.

The next step:
for the United Nations
to launch a global strategy
for development using
the Marshall Plan approach

by JANEZ STANOVNIK

UNCTAD 2 was considered by few as a success, by some as a limited success, and by many as a failure.

Such divergence of opinion is the consequence of different conceptions and expectations of the organization as a machinery for cooperation, rather than a misunderstanding over the real meaning of the decisions and happenings at New Delhi.

The international economic and financial atmosphere at the conference was certainly not propitious for bolder action in favor of assistance to the developing countries.

However, there is a great deal that one could say about "group procedure" and the progress of negotiations at the conference. One must ask what results could have been realistically expected which were not achieved because of such factors as these, before putting the entire blame on an unpropitious atmosphere. This requires some recollections of the origins of UNCTAD.

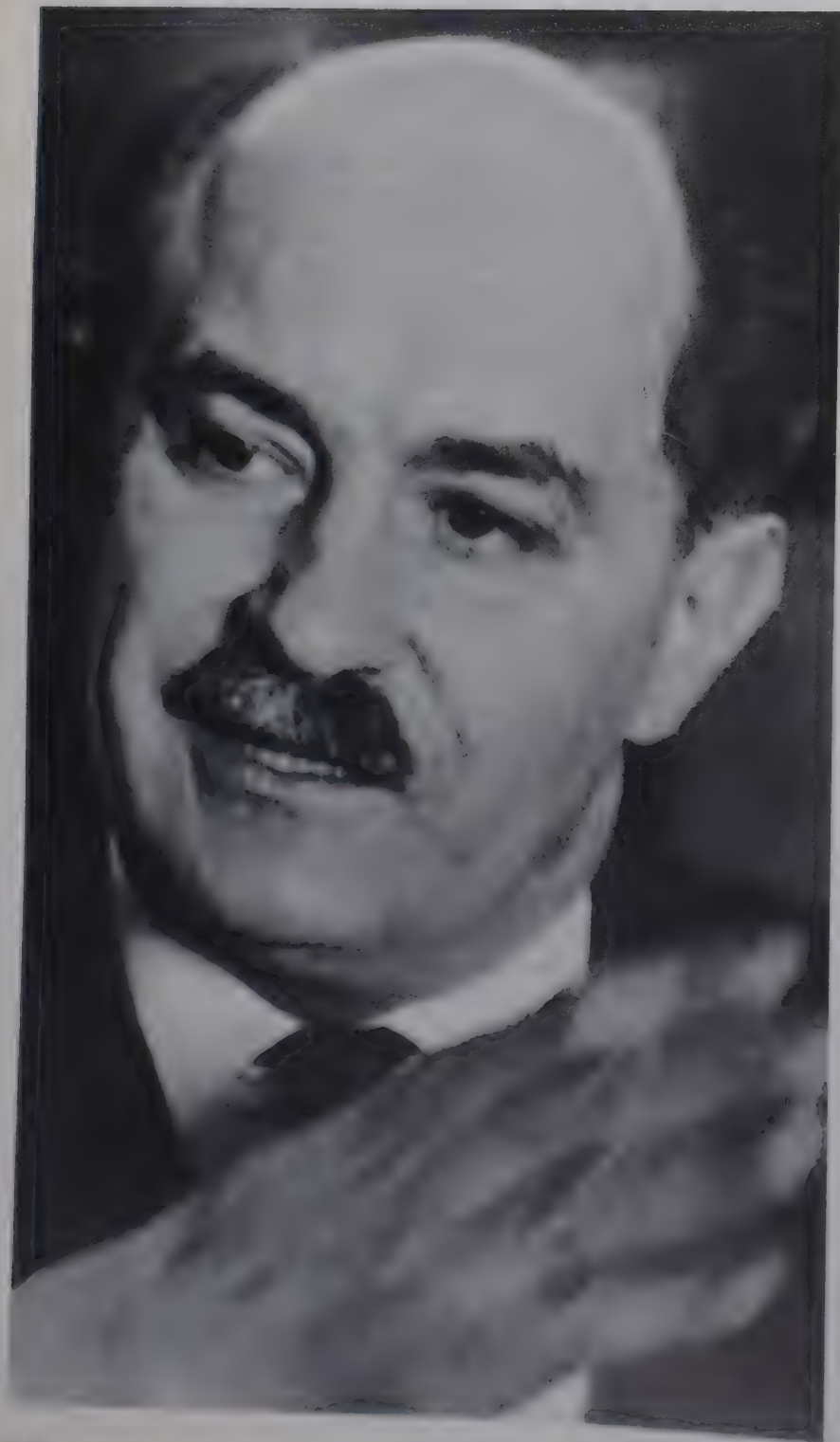
For almost the entire two decades of the existence of the United Nations, the major trading countries have maintained that the operational aspects of trade and finance could not be dealt with by a U.N.-type international organization.

They have maintained that they should be carried out in an appropriate contractual framework such as GATT (General Agreement on Tariffs and Trade), IBRD (International Bank for Reconstruction and Development) and IMF (International Monetary Fund).

This was the real reason for the nonacceptance of the idea of ITO (International Trade Organization), the opposition (to the point of nonparticipation by some countries) to CITO (Commission on International Commodity Trade), as well as for the resistance to the very idea of SUNFED (Special United Nations Fund for Economic Development).

UNCTAD was not created willingly. The participants

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to UNCTAD 1 will remember the bitter debates over the principle of "one country — one vote." A reading of the terms of reference will show that the conciliation procedure was elaborated in order to prevent the adoption of decisions affecting the economic or financial interests of the major trading countries without their consent.

Discussion of the Trade and Development Board, preceding UNCTAD 2, on the question of whether it should be a negotiating conference or not, will show that this basic difference over the role of the organization was not resolved.

The major trading countries see in UNCTAD a forum for international discussion where they are open to the impact of dialogue with the developing countries, and even to pressure by them. This process could lead to two positive lines of action in their view.

Firstly, delegates carry home the results of this dialogue and try to translate them, through appropriate parliamentary procedures, into autonomous political action: thus helping the gradual integration of the developed and developing countries.

Secondly, this discussion has a bearing on concerted international action not necessarily operated by the UNCTAD machinery but, in a decentralized way, by IBRD, GATT, FAO and other organizations.

There was, during the year, a slight evolution in this "debating society" approach, but it would be wrong to think that the position has radically changed.

The socialist countries do not regard UNCTAD as an operational agency in the field of international trade. They have repeatedly emphasized the importance of the general and special principles governing international trade relations and trade practices which have met with the opposition of the developed market economy countries. The trade relations of socialist countries with the developing countries are still mainly conducted through bilateral trade agreements.

Whole new philosophy of development

However, the developing countries are pressing for the transformation of UNCTAD into a truly operational body. This was the meaning of their insistence that the conference be a negotiating conference and that it be a "New Delhi Round," parallel to the "Kennedy Round."

The Algiers Charter* was drafted in this spirit so as to lay the basis for such negotiations. The developing countries recognize that the negotiations cannot take the form of give-and-take, as in contractual negotiations, as the whole structure of UNCTAD rests on the recognition of the principle of non-reciprocity of trade concessions. However, they consider that an agreement on a joint program for development provides a sufficient number of elements for practical negotiation.

But even this type of negotiation did not really get under way in New Delhi, with possibly one exception: the declaration on the world food problem and, in some respects, in the financial field.

This is a matter of greatest concern. The historic mean-

ing of the Algiers Charter consists not merely in the elaboration of a detailed program of action, but in the laying down, in unequivocal terms, of a whole new philosophy of development.

The cornerstone of this philosophy is the recognition by the developing countries that development is their own primary responsibility, and that it must rest upon their domestic efforts.

One cannot help but think, however, that the forces of the past, with their attitude of confrontation, were stronger at New Delhi than those who recognized the new opportunities offered by the Charter of Algiers.

But all chances are not lost. An international conference cannot be judged by its formal decisions but rather by the effect of an exchange of views transmitted to their home countries by the delegates.

Major task ahead for UNCTAD

Raúl Prebisch, UNCTAD's secretary-general, was rightly disappointed that the conference did not pronounce itself on the strategy for development which he expounded with such vigor and persuasiveness. The fact that the conference has not adopted a resolution stating the main future lines for such a strategy should not, however, be interpreted as indifference to this task.

Judging the political will of the conference on the basis of ministerial declarations in the plenary debates, rather than on the basis of expert discussions in the committees, one could come to the conclusion that it strongly supported the main lines of a global strategy for development, and that the lack of a formal resolution was due more to the time factor than to substantive disagreement.

It is clear that the way for elaborating a strategy for development is open and that this is the major task now confronting UNCTAD.

There are several points on which such a strategy could be built:

... the determination of the developing countries to mobilize their own resources and to liberalize intertrade relations to the maximum extent possible;

... the decision of the developed countries to grant, in general, a nondiscriminatory and nonreciprocal preferential treatment for the imports of manufactured products from the developing countries — there is every hope that the inclusion of processed agricultural products will have its effect in the shift of necessary capital from the developed countries;

... the agreed upon calendar for commodity conferences. It is regrettable that the question of access to markets and a technique for the operation of buffer stocks has remained open, though the outcome of the declaration on world food problems gives some ground for hope;

... the financial discussions leading to an agreement on the yardstick for aid — it is disappointing that there was no agreement on the supplementary financing scheme though it was decided that efforts should continue.

Taking all these elements together, one can see that a decisive breakthrough has not yet been reached; though some basic lines have been drawn up for future action.

The development of an overall strategy should proceed

* *The Algiers Charter: a series of recommendations on commodity trade policies, development financing and tariff preferences which were adopted by the representatives of developing countries at the Ministerial Meeting of the Group of 77 in October 1967 as a program of action for UNCTAD 2.*

hand in hand with persevering work on practical agreements in the major sectors: commodities; manufacture; finance; and transportation. Such an overall strategy without concrete action schemes would be senseless, but it should also be recognized that the operation of individual programs outside such a strategic framework would be just as senseless.

The elaboration of such a strategy should rest upon the cornerstone of a joint developed/developing countries' venture. It should provide a rationale for such cooperation and should be based on the long-term planning of this cooperation. A long-term perspective would open the way for an outward looking policy and would influence political decisions against concentrating on short-term measures which are too often inward looking.

Linking of domestic and international efforts

This strategy for development should adopt appropriate targets in the key sectors of interrelated international economic policies. A financial target was adopted by UNCTAD 2 and some progress has also been made toward agreeing on a target in the developed countries for sharing the increase in domestic consumption between domestic producers and foreign suppliers.

It should not be too difficult, in the light of the present trend, to agree on a target for manufactured products, either in terms of domestic production or in terms of imports, or both. Such targets would serve as political guidelines for the parliamentary organs of the developed countries.

The global and sectorial targets should then, of course, be translated into appropriate instruments and schemes, which is where agreements on individual problems fit in. It is to be hoped that the work begun in New Delhi can be accomplished through a permanent mechanism.

The basic point on which the entire concept and success of a global strategy for development hinges is, of course, the linking of domestic and international efforts.

Development is not only an economic but also a social and political process. There is little use in pumping resources into a country where there is no social change and where aid is dissipated in making the reactionaries and the corrupt even richer.

The scheme of supplementary financing, prepared by the staff of the World Bank, was not adopted by the conference. But its basic philosophy — ensuring the continuity of development plans by new financial action if the trade mechanism fails for reasons which are beyond the control of individual developing countries — was universally accepted. This idea deserves wider application.

Discussions on financial questions at UNCTAD 2 showed that the debt burden and the imposed conditions of aid are among the greatest obstacles to faster growth in many of the developing countries.

The problem of tied aid was widely discussed: while international lending for development is largely tied, repayment is not tied. This leads us into a flagrant contradiction: the developed countries, with considerable production facilities and competitive power, secure for themselves the export outlets with tied credits; the developing countries, already in a weak competitive position, must search for convertible

currencies so as to repay these credits. The way out of the existing situation can only be found through a new kind of payment arrangement.

What is urgently needed now, following the New Delhi conference and in the present world situation, is a new Marshall Plan for the developing countries.

This plan would differ from the first one in being applied through the United Nations and in embracing substantially all the developing and developed countries, both socialist and nonsocialist.

The developing countries would present, in UNCTAD, an outline of their own development policies within the framework of such a plan; just as in OEEC (Organization for European Economic Cooperation — which later became OECD) the European countries elaborated their own plans for reconstruction and regional cooperation. These national plans would then be supported by correlated international measures.

Such a procedure would have several advantages as compared to the present approach:

- 1 it would guarantee to all countries an equitable international contribution, commensurate with their own efforts and needs;
- 2 it would guarantee the efficient use of international efforts and resources as these measures would be directed and inter-related;
- 3 it would alleviate the fears of bilateral interference in domestic affairs as there would be a community of nations examining the performances of individual countries;
- 4 it would provide developing countries not merely with assistance, by furnishing material and financial resources, but also with the opportunity of economic management and planning through friendly international discussion in a forum where the developing countries are in the majority;
- 5 it would stimulate efforts for the development of trade and economic cooperation among the developing countries themselves;
- 6 it would create the economic background for the elaboration of payment arrangements; and,
- 7 it would provide a framework for the gradual economic integration, on an equitable basis, of the developed and developing regions of the world.

Such an effort would require the increasing adaptation of the production structures in the developed parts of the world as well.

As the strategy for global development would be a planned operation, this would mean that the developed countries should refrain from increasing their production capacity in those sectors where they do not enjoy comparative advantages.

Such an exercise in economic cooperation goes on continuously among the developed countries. An extension of this area of cooperation and integration so as to include practically the whole world is not merely technologically feasible but politically indispensable for maintaining peace in the world.

BURMA

■ *Tractors gradually replacing elephants*

An efficient teak and hardwood logging industry is vital to the Burmese economy. Forest products earn an average of nearly \$25 million a year in exports. Some 145,000 square miles of the country (57% of the total area) are covered by forests and 60% of the forest under harvest is suitable for mechanized extraction.

Traditionally, timber has been hauled from the forest by elephants, but powered equipment is gradually taking over. Just before World War II, some 6,500 elephants were working in the logging camps of Burma. When the war ended there were only 2,600 elephants left; and this loss started the State Timber Board on the road to mechanization.

in the field
in the field
in the field
in the field

From 1961 to 1966 over \$3 million have been spent on equipment, according to an FAO forestry adviser who worked with the Board. This mechanical power can handle up to 225,000 logs per season, nearly a quarter of the annual timber output. However, the changeover will be gradual for yields per acre and climatic conditions are favorable to the use of animal power for timber extraction whenever possible.

AUSTRALIA

■ *Man-made forests: a growing wealth*

There are approximately 81 million hectares of man-made forests in the world today and this area will double

by 1985 according to an FAO world symposium on man-made forests held in Canberra, Australia, last year.

The symposium dealt in detail with questions of policy, silviculture, management, utilization, and integration of planning and financing. It passed 66 recommendations.

Among facts of general interest:

...approximately half the total acreage consists of plantations in Mainland China and the U.S.S.R.

...the most widely planted group are conifers — mainly pines — which make up about 70% of the reported total.

...eucalypts are probably the most extensively planted of the broad-leaved species. Others widely grown are poplar, acacia and teak.

...the fastest growing man-made forests can produce wood for fuel or poles in 5 to 10 years, pulpwood in 10 years or even less, sawlogs in 15 to 20 years.

ZAMBIA

■ *Live fish airlifted across Africa*

Some 250,000 live fish have been airlifted from Lake Tanganyika to stock the waters of man-made Lake Kariba between Zambia and Rhodesia, 700 miles away. The airlift was the latest step in a \$1 million dollar UNDP (United Nations Develop-

ment Program) project for boosting fisheries development in the Lake Kariba area. The 1,718-square mile artificial lake was formed by the damming of the Zambesi.

The fish selected for this venture was the small, silvery *Limnothrissa Miodon* which is tasty and a prolific breeder. Lake Kariba is naturally supplied with fish but scientists feel its fishery potential could be greatly increased by stocking it with choice outside species.

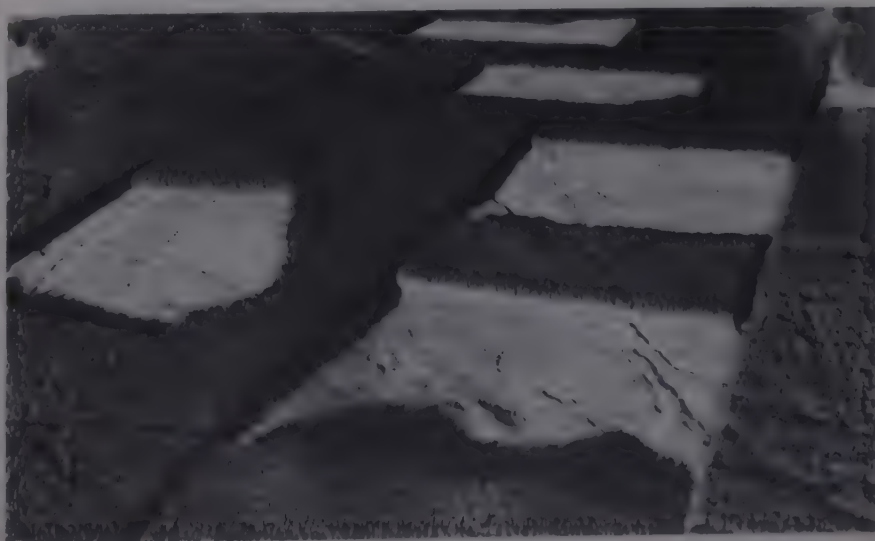
JORDAN

■ *Underground water*

The U.N. Development Program has increased its contribution to the investigation of sandstone aquifers project in east Jordan from \$173,650 to nearly \$1,400,000 while the Jordanian Government has upped its share from \$1,620,300 to nearly \$4 million.

Ultimate object of this major land and water utilization project is to bring water to a region covering 60,000 square kilometers and noted at present for its aridity and poverty. Large tracts of the region have been surveyed both above and below ground and 65 wells have so far been dug. In all, over 21,000 meters have been drilled in the search for the areas where the underground water can best be exploited for irrigation, stock watering and industrial and domestic uses.

Most of the world's man-made forests are coniferous, like this planted forest at Rotorua, New Zealand



INDIA

■ Cutting losses in storage

A five-year \$1.6 million effort to reduce the large losses caused to stored grain in India by pests and fungi has started with the arrival of Gus Huysmans, an FAO agricultural engineer. The main aim of the UNDP project is to show local manufacturers how to make storage units adapted to Indian conditions from local materials, and to encourage creation of a stor-

age industry. A grain storage institute will be set up at Hapur, near New Delhi, while two field stations will collect and assess research results and evaluate the nature and extent of losses in storage.

■ Flying check on forests

Initial conclusions of a UNDP forest inventory project being carried out by a joint Indian/FAO team indicate that central India should be able to support a pulp and paper industry.

A jet helicopter has been bought by FAO from UNDP contributions to help verify inventory work done in the course of the survey. The aircraft, which cost \$100,000, is a five seater. It will shortly be used to transport members of the survey team to and from inaccessible parts of the forests.

The first part of the project — training a strong corps of Indian experts — will be completed toward the end of this year, when FAO experts leave them to carry on the survey.

■ Daily protein food for 25 million children

Alarmed at the grave deficiencies in Indian children's diet, the director-general of India's Health Services has warned that unless successful efforts are made to combat malnutrition, irreparable physical and mental retardation may result for the two thirds of Indian children who are inadequately nourished.

A campaign is now under way throughout the country to give children a proper diet. As one of the first

New funds pledged for agricultural development

New projects approved by the governing council of the United Nations Development Programme (UNDP) for the first half of 1968. Projects listed are those in which the executing agency is FAO; FAO in association with the U.N., or its agencies; or the United Nations, itself, in fields of interest to FAO.

Afghanistan: To assist the government in establishing an organization which will coordinate and control the development of all water resources throughout the country. UNDP — \$1,416,200; government — \$1,020,000. (Four and a half years.)

To prepare detailed plans for the development and expansion of irrigated agriculture in the Kunduz-Khanabad district (in the northeast) with a view to defining the area's investment potential. UNDP — \$671,100; government — \$289,000. (Two years and three months.)

Algeria: To strengthen the government forest service and train professional staff and skilled workers in the course of developing and executing a national forest utilization plan. UNDP — \$1,109,800; government — \$800,000. (Four years.)

Argentina: To strengthen livestock investigation and promotion centers and to train personnel in intensified livestock production techniques. UNDP — \$1,063,700; government — \$5,006,000. (Five years.)

Bolivia: To survey the animal health situation and strengthen veterinary laboratory and field services. UNDP — \$945,400; government — \$1,769,000. (Four years.)

To formulate and implement a program of ground-water development in the Altiplano. UNDP — \$1,479,800; government — \$1,159,000. (Four years.)

Brazil: To establish a farm planning and training service for the Mogiana region. UNDP — \$958,900; government — \$1,350,000. (Four years.)

Burma: To carry out studies to develop the Sittang river valley, including general studies of the basin and feasibility studies for the Yamethin and Yenwe Pyuntaza areas. UNDP — \$2,179,200; government — \$1,096,000. (Three and a half years.)

Chile: To continue and expand the training, research and advisory services of the Institute of Training and Research for Agrarian Reform. UNDP — \$982,000; government — \$1,671,000. (Two and a half years.)

Congo (Brazzaville): To plan and implement a regional program of rural development in the Niari-Loundoma area and on the basis of this pilot operation to define a nationwide program of rural development. UNDP — \$1,399,500; government — \$960,000. (Three years.)

Ethiopia: To complete the establishment of the School for Animal Health Assistants, Debre Zeit, by providing additional training, including field programs for Ethiopian veterinarians who will be assigned to take over its operation. UNDP — \$991,500; government — \$808,000. (Five years.)

Gabon: To assist the government in determining the extent and composition of the forests in the eastern zone and in preparing a forestry and forest industries development plan. UNDP — \$1,348,200; government — \$798,000. (Four and a half years.)

Ghana: To increase production of food crops in selected pilot areas through extensive use of fertilizers. UNDP — \$1,188,400; government — \$1,450,000. (Five years.)

Greece: To undertake feasibility studies leading to the development of forest industries, with special reference to possibilities in western Greece, with a view to attracting investment. UNDP — \$301,900; government — \$410,000. (One and a half years.)

Honduras: To establish a forestry school for the training of low and middle-level technical personnel. UNDP — \$938,200; government — \$1,009,000. (Five years.)

India: To develop sheep husbandry in eight states through improved sheep breeding, shearing, collection, grading, marketing and utilization of wool. UNDP — \$1,634,300; government — \$3,245,000. (Five years.)

Iraq: To complete the establishment of the Iraq laboratory unit for the investigation of animal diseases and the training of veterinary field services through the strengthening of the Veterinary Faculty, University of Baghdad. UNDP — \$1,046,300; government — \$450,000. (Three years.)

To assist in the preparation and planning of a pilot project for soil and water management and in training for irrigated land development and settlement. UNDP — \$203,800; government — \$350,000. (One year.)

Jamaica: To conduct a feasibility survey to determine the economics of production and the market prospects for selected food crops. UNDP — \$110,400; government — \$137,000. (One year.)

Kuwait: To assist in the establishment of a center for the development of Kuwait's water resources, to test and evaluate equipment and materials for desalination plants, and to train the skilled personnel needed for their operation. UNDP — \$568,400; government — \$1,450,000. (Five years.)

steps, it is planned to distribute a new protein food, *Balahar*, among 25 million schoolchildren daily.

Also in the planning stage is the production of 100 million loaves of lysine-fortified bread. The first of nine bakeries, donated by Australia and Canada and set up by the Indian Government, opened recently and five more will be built shortly.

Says the health service report: "The cost of counteracting malnutrition by raising the nutritional levels of children is far less than

either the cost of the resultant decrease in productivity or the cost of treating malnutrition."

DAHOMY

■ *New horizons for fishermen*

Today over 3,000 fishermen operate off Dahomey's 75 miles of turbulent West African coastline as the result of three years' intense multi-lateral and bilateral effort to change and modernize fishing practice.

Until a few years ago the bulk of commercial fishing took place in quiet landlocked lagoons. Every year some 20,000 tons of fish were harvested from some sixty thousand acres of calm, brackish water.

Three years ago a new port was built at Cotonou: the construction of these new facilities caused the sands to shift. The lagoons opened up, never to close again, and a large part of the fish population vanished.

This meant a new approach to fishing, new boats, new

men and new training.

Many organizations have shared in the work. Outboard Marine (Belgium) S.A. contributed 50 motors worth nearly \$20,000 to the Freedom from Hunger Campaign fishing boat mechanization project. The Canadian FFHC Committee gave over \$10,000.

Dahomey's neighbor, Senegal, provided five crews of expert fishermen with their own canoes to prospect offshore fishing grounds and to train the Dahomeans in line fishing.

Stronger and bigger planked

Lebanon: To further the planning of hydroagricultural development in Lebanon by carrying out irrigation feasibility studies and related pilot schemes. UNDP — \$1,011,100; government — \$2,378,000. (Four years.)

To complete the current survey and evaluation of Lebanese water resources and to plan their development and utilization with particular regard to agricultural needs and to the water supply for Beirut. UNDP — \$221,000; government — \$240,000. (One year.)

Madagascar: To promote development of the fishing industry by training personnel, undertaking trial and demonstration fishing, and carrying out marketing studies. UNDP — \$966,500; government — \$364,000. (Four years.)

Supplementary assistance for hydrogeological exploration in southern Madagascar, with special emphasis on the Morondava river basin. UNDP — \$245,500; government — \$129,000. (One year.)

Malaysia: To assist the government in strengthening all aspects of its forestry planning and services as a basis for the development of forest industries. UNDP — \$1,221,800; government — \$954,000. (Five years.)

Mauritius: To assist the development of the fishing industry through demonstration fishing and marketing studies. UNDP — \$396,900; government — \$504,000. (Three years.)

To prepare feasibility reports on irrigation development, and to undertake supplementary studies of natural resources. UNDP — \$406,400; government — \$171,000. (One and a half years.)

Morocco: Assistance in the establishment and initial operation of a center for the collection, indexing and dissemination of documents on rural and agricultural development. UNDP — \$174,000; government — \$292,000. (Two years.)

To develop a new curriculum for intermediate-level forest engineers at the Forestry School in Salé. UNDP — \$1,051,700; government — \$887,000. (Five years.)

Nicaragua: To assist the government in developing the pine forests of the northeast and to carry out technical and economic studies for large-scale investment in the region. UNDP — \$1,000,100; government — \$1,551,000. (Four years.)

Peru: To investigate livestock production possibilities and to provide training in livestock production and health techniques in high altitude and tropical areas. UNDP — \$1,124,400; government — \$2,175,000. (Four years.)

Republic of Korea: To assist in providing the expanding fishing industry with trained technicians to operate modern fishing vessels in coastal and nearby high seas areas. UNDP — \$1,117,600; government — \$1,459,000. (Four years.)

To assist in the expansion of the fishing industry through the provision of advisory services. UNDP — \$121,100; government — \$35,000. (One year.)

Romania: To improve, expand and strengthen research on plant breeding and seed production at the Institute for Cereals and Technical Crops, Fundulea. UNDP — \$1,377,200; government — \$5,800,000. (Four years.)

Singapore: To assist in the development of new industrial fisheries through the training of fishing technicians. UNDP — \$1,261,900; government — \$1,481,000. (Five years.)

Somalia: To carry out intensified mineral exploration in two zones; to strengthen the geological survey. UNDP — \$776,600; government — \$977,000. (Two years.)

To assist in the field training of veterinary personnel in the control of rinderpest, contagious bovine pleuropneumonia and other diseases. UNDP — \$158,200; government — \$374,000. (Two years.)

Syrian Arab Republic: To assist the government in implementing an agricultural development program in the Ghab region by helping to train personnel, establishing supporting institutions and creating permanent settlements. UNDP — \$1,313,900; government — \$1,110,000. (Three years.)

Togo: To assist in preparing a comprehensive forestry and forest industries development plan. UNDP — \$877,200; government — \$580,000. (Three years.)

United Arab Republic: To complete the establishment of the Animal Health Institute for the investigation of animal diseases and the strengthening of veterinary teaching at the University of Cairo. UNDP — \$961,400; government — \$654,000. (Three years.)

United Kingdom, Fiji: To prepare development plans and feasibility studies for the rational utilization of forests and for the expansion of forest industries. UNDP — \$238,400; government — \$200,000. (Two years.)

Upper Volta: To improve agricultural productivity by training increasing numbers of agricultural technicians and farmers. UNDP — \$1,129,500; government — \$1,243,000. (Five years.)

Uruguay: To study animal diseases and to train national personnel in animal health techniques. UNDP — \$1,149,000; government — \$2,215,000. (Five years.)

Republic of Zambia: To develop the natural resources of the Luangwa valley through improved wildlife conservation and utilization, and promotion of tourism. UNDP — \$1,056,400; government — \$2,679,000. (Three and a half years.)

Regional: Guinea, Mali, Mauritania and Senegal: To promote increased agricultural productivity through a comprehensive program of applied agricultural research and pilot demonstration (see article by Curtat in this issue). UNDP — \$1,850,600; governments — \$788,000. (Five years.)

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Wright Rain not only produce portable sprinkler irrigation schemes, they are capable of developing whole areas on a 'turnkey project' basis. Field teams make initial surveys and all subsequent work including civil engineering is planned and carried out by their specialists. Supervision continues until the complete irrigation project is operational.



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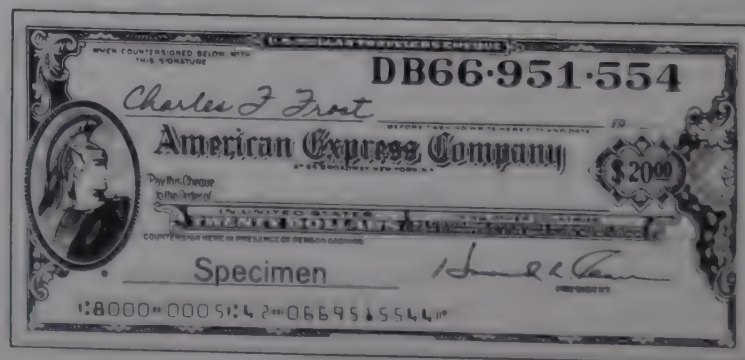
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vessels were designed to cope with the force of the surf. Norwegian and Swiss cooperatives, French bilateral assistance, United States AID and FAO provided a large part of the needed technical expertise and financial resources.

PERU

■ *Tunnels through the Andes*

After a three-year survey of the mountain and coastal regions of Peru, FAO has submitted to the Peruvian government a large-scale project aimed at the agricultural and industrial development of the Pampas de Olmos region in the arid coastal belt. The course of three rivers would be diverted from east to west through two tunnels to be driven 12 miles through the Andes.

This project, which will also involve the construction of a network of canals, power transmission lines and electrical power stations, will permit the irrigation of nearly 90,000 hectares of fertile land. Given enough water, a wide range of tropical and subtropical products can be grown including cotton, rice, sorghum, soybeans, groundnuts, oilseeds and alfalfa. Livestock could also be increased from the present 15,000 head of cattle to 140,000, including more than 80,000 milk cows.

The three-year survey was carried out for FAO by an Italian firm, Italconsult, under a UNDP project. It included investigation into many aspects of topography, hydrology, geology, soil and water and marketing.

SUDAN

■ *Using the water hyacinth*

The water hyacinth clogs up waterways, rivers and lakes all over the world.

■ *Country guides for investors*

To encourage foreign private investment in developing countries, the FAO/Industry Cooperative Program is putting out a series of country studies — prepared by the FAO Legislative Branch — setting out in detail for the prospective investor the legislative and administrative measures taken by each country to attract and regulate foreign capital.

These studies deal exclusively with investments in agriculture, forestry, fisheries and related industries. The studies so far published concern Chile, Guatemala, Kenya and Turkey. In preparation are studies on Argentina, Colombia, Ghana, Ivory Coast, Madagascar and Morocco. Other studies will also be issued later.

Ninety to 100 million tons of it invade the Nile every year.

Dr. E.C.S. Little, an FAO weed control consultant, has set in motion a project in the Sudan to try to control the weed by gathering it by hand (and paying the workers with World Food Program food), drying it and spreading it in the vegetable gardens along the Nile as mulch and for weed control. Tests are also being carried out to see whether it makes good compost, while the use of the hyacinth ash, rich in phosphate and potash, is also under study. It may also find use as animal fodder.

Latest victim of the beautiful flower is the island of Java where it is taking over a large lake and stifling fish life. Dr. Little has been assigned to Indonesia to investigate.

ITALY

■ *Substitute for calves' stomach*

Cheese specialists from 10 countries met in Rome in April at a consultation on how a world shortage of rennin, used in cheese making, can be countered.

Rennin, an enzyme from the fourth stomach of unweaned calves, is traditionally used to coagulate or "set" cheese-milk. The available calf vell rennet, or stomach lining, which produces it, cannot meet the industry's needs. Delegates discussed whether

artificial enzymes now being tried can be made to act as efficiently as nature's product.

PHILIPPINES

■ *New fishing vessel*

The 'Hasa Hasa, British-built fishery research and training vessel, arrived in Manila recently where she will take part in a deep-sea fishery development project, financed over five years with nearly \$4 million from the United Nations Development

fish. The 70-ton vessel began operations in April, joining another research-training vessel taking part in the project, the Japanese-built *Maya Maya*.

MEXICO

■ *Changing Valle de Mezquital*

A number of food-for-work projects have been started in Mexico's Valle de Mezquital under the banner of DESMI, a nonprofit organization founded two years ago to foster the economic and social development of the 400,000 Otomi-speaking Indians who live there.

These people, whose chronic malnutrition and extreme poverty are responsible for one of the highest death rates in the world, still depend on a primitive system of agriculture for their living. Seventy percent of their land only supports the hardier types of cactus life.

One of their first necessities is water and three villages have been enrolled in a voluntary self-help commu-



The Maya Maya, a Japanese-built research training vessel which is being used in the Philippines fisheries development project

Program and managed by FAO.

The vessel is equipped for experimental trawling and livebait fishing and is fitted with the latest electronic apparatus and fishing gear for locating and catching marine

nity project to dig a 17-mile long canal which will bring into production 16,000 acres of arid land. DESMI has also acquired a 120-acre farm, started a pig raising program and next plans to build a small meat processing plant.

TUNISIA

■ A model agricultural college

The North African College of Agricultural Engineering, financed by the World Council of Churches, is due to end as a Freedom from Hunger Campaign (FFHC) project next year but the Tunisian Government has asked that the project, instead, be expanded and continued.

Located at Medjez-El-Bab, 40 miles southeast of Tunis, the college turns out every year about 50 specialized technical agents, several from other countries of North Africa. It is the only agricultural college in Tunisia that gives both technical and practical courses in mechanized farming.

These specialists, trained in modern techniques yet working closely with a peasantry still largely backward in its thinking, could become a vital force in the agricultural progress of developing countries. The Tunisian Government is planning to start three more colleges based on this model: one for forestry, another for livestock and a third for horticulture.

COLOMBIA

■ Improving the fishing industry

A four-year UNDP fishery development project went into effect in Colombia early this year. FAO specialists are advising the government on strengthening the fishery administration, developing the fishery industry and organizing research. The project, which costs nearly \$2 million, will help to set up a national fisheries research and development center. Plans call for the delivery of a fully equipped fishery vessel for experimental purse seining and trawling, and for research off Colombia in the Pacific Ocean and the Caribbean Sea.

MANY NEW FOOD-AID PROJECTS

A recent count showed pledges to the UN/FAO World Food Program (WFP) for the period 1969-70 amounting to just over \$120 million, some two thirds in commodities, the rest in cash and services. This total represents slightly more than 60% of the target set at WFP's third pledging conference held in New York at the beginning of the year.

WFP's governing body met in Rome in April to consider requests for food aid and to examine progress of operational projects. Projects approved, and agreements signed, this year have included:

... \$534,000 to help farm settlement on an Afghanistan irrigation project (three years).

... \$450,000 to help train more teachers in Algeria (four years).

... \$436,000 to help rural development in the Central African Republic (four years).

... \$5.9 million worth of coarse grains to help develop India's poultry industry (five years).

... \$800,000 emergency food aid to Indonesia in the wake of torrential rain and flooding (six months).

... \$876,000 to help expand a farm settlement project in Iraq (three years).

... \$262,500 to help provide meals in Liberian secondary schools (three years).

... \$240,000 to help increase milk production and stimulate livestock improvement in Niger (four and one half years).

... \$480,000 to Pakistan to help raise production sixfold from the Karachi milk plant (two and one half years).

... \$145,000 for vocational training centers in Peru (three years).

... \$672,000 to help increase milk supplies and provide cattle feed in Senegal (four years), with a further \$714,000 going to self-help rural development (two years).

... \$270,000 to help provide meals for trainees in Sierra Leone (five years).

... \$423,000 to help build schools and extension centers in Somalia (three years).

... \$510,000 emergency postwar food aid to Syria.

... \$1,894,000 to Taiwan for an irrigation and flood control project (\$1.2 million - two years; the balance - four years).

... \$747,000 to help voluntary youth work camps in Tanzania (five years).

... \$528,000 to aid the rural self-help movement in Togo (three years).

... \$116,000 to help build small earth dams in southern Tunisia which will allow more cactus cultivation and, thus, more sheep fodder (five years).

... \$840,000 emergency postearthquake food aid to Turkey.

... \$198,000 to further help youth service camps in Zambia (two years).

... \$484,000 to help build village wells, dams and reservoirs in Upper Volta (five years).

GHANA

■ Thirst for practical books

To help fill the need for technical literature in Africa, FAO jointly with the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) has been operating a project for the production and publication of manuals and text-books.

Sixteen titles have so far been released, the latest being an *Introduction to Agriculture in Nigeria* by Professor Oyenuga. Seven more titles will be published during 1968, according to a meeting of experts on book development in Africa, held in Ghana earlier this year.

KENYA

■ 4-K clubs show the way to better farming

More than 60% of Kenya's population is under 20 and one of the major problems of tomorrow will be to keep the country's young people on the land and out of the slums.

One of the ways is through the 4-K clubs. The aim of the clubs: to provide young people in rural areas with sound advice on all types of farming. The ultimate purpose: to prove that farming is a satisfying and profitable occupation.

Modeled on the North American 4-H clubs and started with United States funds, Kenya's 4-K clubs now receive backing from the Freedom from Hunger Campaign (FFHC) through the Unesco gift coupon program.

There are over 1,100 4-K clubs scattered throughout the country with a membership of some 30,000 mostly boys of school age. Club leaders are all volunteers who receive their training from Ministry of Agriculture field workers under an FFHC plan, also financed with Unesco gift coupons.

The four Ks stand for Swahili words meaning unity, self-help, better farming methods and Kenya.

Incomes Triple for Resettled Kenya Farmers

The Mwea/Teberre irrigation settlement lies about 60 miles northeast of Nairobi, close to the foothills of Mount Kenya, some 4,000 feet above sea level. It was started in 1955 to settle landless families from the Central Province. By the end of the first development period in 1960, 5,000 acres of soil had been prepared and di-

vices will continue to be used on a further extension of 3,000 acres to be financed by German (Fed. Rep.) funds.

All the newly settled farmers have built their own houses in a series of new villages on the settlement. To achieve this, a major difficulty had to be overcome — the newcomers were practically destitute. An arrange-

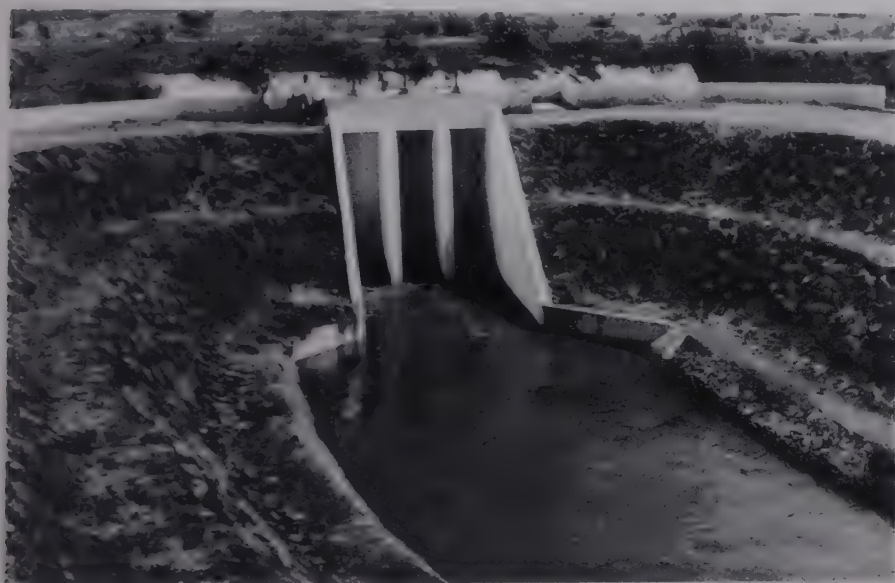
throughout the year (such steady working is, however, unlikely) amounts to \$115.

Tenants on the Mwea/Teberre scheme earn an average of \$350 annually.

In the words of a senior agricultural officer in Kenya, the setting up and operation of this irrigation scheme have been "nothing less than an agricultural and social revolution." When the settlement started, very few people in Kenya knew anything about rice production. With the exception of two senior agricultural officers seconded to the scheme, everyone from senior officers down to the most junior member of the staff had to be trained locally. Not only is the crop new to Kenya, but there is no tradition of irrigation in Kenya. An immediate task was to find men who could absorb the basic rudiments of technology and who also had the personality and the leadership to pass on their knowledge to their juniors and to the settlers themselves.

The people settled under this scheme are a rural proletariat. They have come to these lands with nothing; most have never engaged in anything but the lowest subsistence farming. Now, almost suddenly, they find themselves on an irrigated holding. They are taught to grow a crop they have never seen in more water than they knew existed. They have become members of a team working within a highly organized, centrally controlled agricultural system. They are the targets of a concentrated program of agricultural education and information.

Like many other countries in Africa, Kenya is faced with a formidable population expansion and with land hunger. This scheme provides a partial answer. Irrigation brings new land into cultivation. Just over ten years ago, Mwea/Teberre was a semidesert, seasonally grazed by a few cattle. Today, it supports some 15,000 people.



The irrigation scheme depends on water from two rivers rising in the Mount Kenya foothills. Water pours through an intake canal from the Thiba river

vided into single acre units suitable for rice cultivation and had been provided with complete irrigation systems. The project involved a great deal of earthworks, mainly canal excavation and land levelings.

By 1960, 1,200 landless African families had been settled. It was upon these foundations that the United Kingdom FFHC project was launched in 1964 at a cost of some \$450,000. By the end of 1967 more than 2,000 additional acres had been developed capable of settling a further 500 families comprising about 3,500 people. A reception center to handle the rice produced on the new extension was completed in 1965. An efficient development team has also been built up and its ser-

ment was therefore made with a commercial bank for them to be granted \$140 house-building loans, repayable in three years from crop income and unsecured except by reputation of the settlement. By the end of 1967 the farmers on the extension had received housing loans totaling some \$55,000 and so far not one settler has defaulted on his repayments.

By the end of the 1968/69 season when the whole extension will have been fully operational over its entire surface for at least one crop, it will have produced since inception 10,919 tons of paddy with a gross value of \$750,000. An optimistic estimate of the annual wage in this area for unskilled labor working six days a week

in the field
in the field
in the field
in the field

Asian Drama by GUNNAR MYRDAL

This is not a book like other books, which will be read and then put away on the shelf. Gunnar Myrdal's *Asian Drama* will live with us whenever we contemplate, discuss and argue about the problems of Asia and other underdeveloped areas.

It is a synopsis of all the manifold factors which have created south Asia as it is today, and which will shape its future. It is an honest book, written by a western economist who knows the difficulties of objective evaluation and the possibilities of bias, and who feels a compulsion for searching his own soul. It is written on the basis of worldwide experience and with the same methods which made Myrdal's *An American Dilemma* one of the most profound social analyses of its time.

The book will help Asian governments to understand the uncertainty of their present position, which is difficult to defend against the evils of the past and from which it is difficult to ensure the way to a better future. Myrdal says, in the chapter on agricultural policy, that the Asian countries now have the worst of both worlds: they cannot realize agrarian reform and cannot carry out efficient agriculture. In another chapter he talks frankly about the corruption which marks the atmosphere of south Asia (and other underdeveloped regions).

The developed countries will recognize the not very flattering role that they have played in south Asia during the last few centuries, and even today. Myrdal stresses the weaknesses of their present policies and their bias in evaluating the reality of south Asia.

One of the great advantages of Myrdal's inquiry is that he brings out the divergence of western and Asian values and the great differences in development. When the western world understands this fundamental aspect of the development problem of Asia — and when western vested interests, looking for profitable solutions, discipline themselves or are disciplined — then there will be hope that European and American aid and advice will be useful.

Gunnar Myrdal says that, generally speaking, the western approach is ab-

stracted from most of the conditions that are peculiar to the south Asian countries and which are responsible for their underdevelopment and for the special difficulties they meet in developing.

The unique importance of Myrdal's inquiry is the decisive questions which he poses to himself, to the reader, to governments and to the international agencies.

The central concern of *Asian Drama* is with the problems of economic underdevelopment and development, and with planning for development. The starting point of Myrdal's study is recognition of the fact that pure economic analysis can never be successful. Distinctions between "economic" and "non-economic" factors are artificial at best. The only worthwhile demarcation is between relevant and less relevant factors and the line of demarcation will vary with the characteristics of the environment in the study.

The whole inquiry has a strong institutional emphasis. The starting point is the incontrovertible fact that the basic socioeconomic structure of south Asia is radically different from that existing in advanced countries. The problems of development in the region call for induced changes in the existing social structure as a continuous development. As this structure does not change spontaneously, or to any great extent in response to economic policies, far-reaching institutional reforms become necessary.

This point is of utmost importance since the bias for purely economic solutions is very strong in the official policies of bilateral and multilateral programs.

Gunnar Myrdal writes: "The essential first step toward an understanding of the problems of the south Asian countries is to try to discover how they actually function and what mechanisms regulate their performance. Failure to root analysis firmly in these realities invites both distortions in research and faults in planning."

If the United Nations organizations, particularly FAO, were to draw one conclusion from Myrdal's inquiry, it would be recognition of the urgent need for an intensification of institutional research in order to ensure proper guidance for de-

velopment programs. It is not sufficient to assert qualifications and reservations meant to take into account factors left out by conventional economic analysis along western lines; what is needed is a framework of theories and concepts that is closer to the realities of south Asia.

A study by Gunnar Myrdal always begins with a set of selected value premises. Any such study must look at the problems from the standpoint of the interests and ideals, norms and goals that are relevant and significant. Myrdal has selected new values directed toward modernization. This "modernization ideal" was impressed on the nations of south Asia at the dawn of their independence and has become the official creed, almost the national religion; Myrdal sees in it one of the powerful strengths of new nationalism.

An important element is the need to apply modern technology to increase productivity. Other elements which he feels should accompany such modernization include social and economic equality and improved institutions and attitudes.

The last is the most striking for it comprises the ideal of a social revolution aimed at the creation of the 'new man,' the 'modern man' or 'citizen of the new state'. Such a man, he feels, must be efficient, dedicated, orderly, punctual, frugal and honest. He must be able to make rational decisions, be prepared for change, alert for opportunities as they arise, enterprising, cooperative and, most important of all, he must possess integrity and self reliance.

The chapter on the problems of labor utilization is of the greatest importance for all students of south Asia since it places the industrialization issue in its proper perspective. Myrdal states that only intensification of labor in agriculture can take care of the population's surplus during decades to come.

He says that a variety of institutional pressures have coalesced to induce spreading of the workload, while both traditional and modern factors have operated to restrict the members of the population regarded as legitimate job claimants. The net effect of these forces has been

to suppress growth in output per head.

With respect to the population problem, Myrdal does not believe that conditions in south Asian villages are particularly favorable for awakening a desire to limit the number of children. He rightly recognizes that the setting of Asian life is such that children are expected to fulfill obligations to parents more than parents to children. However, he forecasts dramatic changes in Asian governments' interest in the population problem and feels that by the beginning of the 1970s government programs for family limitation will be in force in all south Asian countries.

In his prologue Gunnar Myrdal writes on the concept of drama and explains why he chose *Asian Drama* as the title for his book. He draws a distinction between the classic conception of drama and real-life drama. He says: "In life, while the drama is still unfolding — as in the practical phase of a study, when policy inferences are drawn from value premises as well as from premises based on empirical evidence — the will is assumed to be free, within limits, to choose between alternative courses of action. History, then, is not taken to be predetermined, but within the power of man to shape. And the drama thus conceived is not necessarily tragedy." We can only pray that it may be so.

Erich M. Jacoby

Asian Drama, An Inquiry Into the Poverty of Nations, by Gunnar Myrdal.
Twentieth Century Fund and Pantheon, New York, 1968 (three volumes, 2,284 p.), \$8.50 for the three volumes.

Other reviews of ASIAN DRAMA

INTERNATIONAL
Herald Tribune

Swedish economist Gunnar Myrdal contends that economic development efforts in south Asia will not succeed until there is a social revolution.

Aid from the west can be of only marginal help, he believes, until countries such as India carry out radical reforms in agriculture, education, population planning and similar areas.

...Basically he believes that the Asian countries have been mistaken in attempting to adapt western approaches to many

problems deriving from their particular historical circumstances.

He is especially critical of education, or what he terms "miseducation," and contends that the emphasis must be on quality rather than on mere quantity.

"Throughout south Asia there is a traditional contempt for manual work, and the educated tend to regard their education as the badge that relieves them of any obligation to soil their hands," he writes, noting that this attitude "is a very serious obstacle to development."

Western countries err in their judgments of Asian socialism, which is a "rather vague term for the modernization ideology," Mr. Myrdal asserts. It applies mainly in areas where there is little private initiative and nowhere has it extended to the collectivization of agriculture. Nevertheless, economic inequalities have increased since independence...

The Times of India

...Professor Myrdal is right when he says that the western concept of employment "has little meaning in a society where, in the absence of a dole, the pressure of economic distress forces everyone to find some means of support, where the labor market is not fluid, where many persons of working age are disinclined to engage in physical labor and where standards of work performance are very low."

What holds down labor input and efficiency is not lack of capital but lack of stamina, ignorance and the deadweight of tradition.

Again, Professor Myrdal is not the first to point out that "without any technical innovation and even without investment other than longer and more efficient work, agricultural yields can be raised substantially."

But who is to provide the stamina? Very often the tenant or the sharecropper is not even sure how long he is going to stay on the piece of land he tills and he is afraid that the more it grows, the greater will be the rent he will have to pay. So he just does not put his heart into his work, much less invest in the land he tills.

Professor Myrdal is not the first man to say that absentee landlordism must go. The planners have said it for 18 years.

But no party has been able to muster the will to define "personal cultivation" in a way which will make it impossible for absentee landlords to resume land only to lease it out to tenants or sharecroppers.

Professor Myrdal is a radical. But out of sheer frustration he concludes that radical land redistribution, however desirable, is not politically feasible in south Asia today. So instead of paying lip service to the slogan "land to the tiller," he tells us, we will do far better by making "a deliberate policy choice in favor of capitalist farming."

Those who invest in land and make a good job of it must be allowed "to reap the rewards of their efforts." Absentee landlords must be penalized by heavy taxes. And nonfarming nonresidents must be barred by law from acquiring land.

The government, is, of course, too timid to admit in so many words that it has made such a policy choice. It is inhibited by all that it has said in the past. But a choice on these lines is already being made, particularly in areas where the new agricultural strategy is at work.

For the first time those who have money know that investment in agriculture, if made with care, can be more paying than in industry.

...Professor Myrdal almost despairs of the system. "Under the present southeast Asian conditions development cannot be achieved without much more social discipline," he writes, and adds that "an authoritarian regime may be better equipped to enforce social discipline." But then even he is careful to point out that the existence of even such a regime "is no guarantee of this accomplishment".

...The question here, as in most democratic countries, is how to make the system more responsive to the true needs of the people. As far as India is concerned the people will accept a far greater measure of discipline if the political parties do so. They have to put a curb on their greed and their petty rivalries and achieve some sort of consensus on issues which have a direct bearing on productivity and efficiency.

Only when they do so and limit the area of political conflict will the open competition for power become meaningful. Until that happens there will be no escape from mushy thinking or mushy planning.

African Economic Development

by William A. Hance

Analysis and forecast are the economist's major weapons. Let him rejoice as he opens Mr. Hance's book, for pages 220 and 291 offer magnificent tables listing the symptoms of the ills afflicting Africa: aridity, political uncertainty, lack of roads and tribal rivalries — 33 countries, 10 parameters and the patient is analyzed. Then comes the treatment: agriculture, tourism, water power, each remedy marked from 1 to 4. Finally, the short- and long-term prospects, duly weighed and ready for the computer. If everything were that simple, what happened to Kansas and Oregon two centuries ago?

The reader knows from the foreword that this book is based on notes prepared by a study group dealing with United States foreign policy. A good half of the chapters, written more than ten years ago, have been compiled from documents rather than field investigations. Facts and figures are plentiful, though in very extended order like a disjointed course of physical, economic and political geography (North and South Africa are absent, and countries such as Nigeria, Senegal and Ivory Coast are given only a few paragraphs).

Nevertheless, Mr. Hance's book is worth reading despite its overambitious title and lack of homogeneity. Indeed, it includes integrated studies on three big pilot projects for development of the vast continent — the Gezira-Managil irrigation network in the Sudan, hydro-electric development of the Volta river in Ghana and the iron mining complex in Liberia.

The Sudanese irrigation system, covering about 600,000 hectares, has made the

Sudan one of the world's leading producers of long and medium-staple cotton.

The Akosombo Dam, the aluminum plant and the port of Tema have turned Ghana into one of the world's principal producers of aluminum. Liberian mines are among the foremost suppliers of rich iron ore for the iron and steel industries of Europe, North America and even Japan. In each case, total investments amount to hundreds of millions of dollars. The author examines the vicissitudes of such financing in the light of fluctuations of world politics and the effect on the infrastructure of the country and its general development (employment, living standards, balance of payments).

Sun, water, earth and the peasants' labor in the Sudan, the power potential of the Volta river in Ghana, the riches of the subsoil in Liberia are supplying the developed world with raw materials and are giving Africans a fighting chance. Here are three examples of development in which Africa is furnishing its riches in the form of raw material to the industries and consumers of the rich countries. They are well chosen as examples, considering their technical success and their value.

But from the point of view of long-term strategy it is important to analyze how some of these undertakings threaten to increase the vulnerability of the countries benefiting by them because of growing indebtedness and unsettled markets.

To achieve greater independence, Liberia will have to process her iron ore one day, creating a big African iron and steel industry and selling machinery to Africa and the world. Likewise, Ghana which, incidentally, uses kilowatt-hours to process imported aluminum and does not yet exploit her own bauxite, will one day have to produce aircraft bodies and engines rather than aluminum ingots.

This poses the problem, among many others, of market size. Mr. Hance's book devotes a very instructive chapter to the integration efforts of East Africa. Kenya, Uganda and Tanzania are endeavoring to set up a viable regional economy amid a thousand difficulties, of which politics is not the least important.

Strategies defined by the Charter of Algiers, which possess the great merit of having been drawn up by qualified representatives of the poorer countries,

illustrate and conclude the data supplied by a book such as this: which justifies their fundamental claim to recognition and independence.

Taking this into account, Mr. Hance's book can serve as reference if African leaders will forget his too frequent objections to the Africanization of the superstructure.

Raymond Aubrac

African Economic Development by William A. Hance.

Frederick A. Praeger, New York, 1967 (326 p.)

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FAMINE 1975

by William and Paul Paddock

Population expansion and stagnant food production in the underdeveloped nations are on a collision course. Serious famines and accompanying civil disorders are inevitable by 1975. With no possibility of producing the needed food and no other production to finance importation of it, the hungry nations will have to rely mainly on the U.S.A. for supply of food on noncommercial terms, state the authors. But even the massive production capacity of the United States will be inadequate and hard choices will have to be made as to who does and does not receive food — in other words, what people and what nations may survive?

Statistics and analyses developed in Part I show that the relationship between population and food supply in much of the developing world is already unfavorable. People are hungry now and by 1975 will be starving — a time of famines, perhaps lasting for decades, will have begun. The authors argue that a past tendency to underestimate population increase and overestimate food production suggests that famine is nearer and likely on a more massive scale than some estimates indicate.

While medical advance continues to lower the death rate, the birthrate remains stable or rises. For a variety of reasons, hopes of substantially limiting population growth are something for the future. The authors dismiss the possibility that any of the already known means of increasing food production can have sufficient impact by 1975. They conclude their analysis of the situation in the hungry world by looking at factors outside the agricultural sector which affect food production. Here, too, they find little ground for optimism.

The possible contribution of the developed world to alleviating famine is considered in Part II. Potential suppliers are the U.S.A., Canada, Australia and Argentina but, to date at least, only the United States has shipped substantial quantities on a noncommercial basis. This position is seen as continuing due to the likely availability of commercial markets large enough to absorb the production of the other three countries.

Given the situation of insufficient United States food supplies to meet the needs for shipments to all the hungry nations, the authors in Part III of their book give their views on how the decision should be made as to which nations receive food. Drawing an analogy with the situation at an overextended field medical station in wartime, the authors propose their system of "triage." Wounded coming to such stations are classified as: (1) can't be saved and thus no point in medical attention; (2) walking wounded, in pain but can wait for treatment; and (3) seriously wounded but can be saved by prompt medical treatment.

The real merit of the book is that it draws attention, in dramatic terms, to the increasingly serious population/food supply problem and this is the first step in bringing about action to deal with it. While the various aspects of the problem are extremely complex and difficult to quantify, there can be no doubt about the general conclusion that famines lie ahead — only the timing and extent are debatable.

Unfortunately the text of the book is interspersed with rather subjective judgments, or at least judgments based on inadequate information, on what countries will do. Two examples, one from the developing and one from the developed world, are illustrative: (1) United Arab Republic, p. 48/49 — "The Aswan Dam is only a delusion of progress; its new land will be farmed in the same old ways by the same old felahins procreating as always without effective official support to curtail family size;" (2) With reference to the contribution of Canada, Australia and Argentina to feeding the hungry nations, pages 130 and 131, "(c) Even if they could afford generosity at that level, these countries have not yet developed within their governments and citizenry a sense of moral duty, and this comes slowly. There is little evidence

that this exists today even at a rudimentary level. During 1962-64 Canada shipped only 100,000 tons of wheat and Australia only 50,000 tons on a noncommercial basis, insignificant amounts in comparison with the 13,500,000 tons shipped by the United States on a noncommercial basis during the same period." Such judgments can lead to a slightly more pessimistic forecast than may be justified.

More serious, however, they do not add to the reservoir of goodwill among nations which is absolutely essential in dealing with crises of the magnitude predicted by the authors and, eventually, in achieving a better world for all. Nor does an unfavorable judgment, valid or invalid, necessarily lead to the kind of action needed to improve the situation.

It is the third part of the book, where the authors put forward their proposals as to how the U.S.A. should deploy its food resources in time of famine, that is most contentious. Here, the authors seem to be advocating on the part of the United States the nationalism they deplore in the developing countries. One wonders, for example, if it would be in the best interests of the United States, in times of widespread economically, politically and socially disruptive famine, to reserve for itself the decision on how its food supplies would be shared with the needy nations of the world. Is it possible that the authors underestimate the degree of internationalism prevailing in the United States in suggesting that it would do so?

It is to a considerable extent the time factor — target date 1975 — which leads to the extremely pessimistic conclusion of the book. Governments in the newly developing countries are acquiring increased experience and are also increasingly appreciating the need to give higher priority to agriculture in their development plans and allocation of resources. Their capacity to make use of the findings of studies is, in effect, increasing. Then, too, action initiated in a number of developing countries, including India, in the last few years may begin yielding results even before 1975 and thus the crisis may be on a lesser scale than predicted by the brothers Paddock.

D.C. Kimmel

Famine 1975 by William and Paul Paddock. Little, Brown and Company, Boston, (276 p.), \$6.50.

Weather and Agriculture

Edited by
James A. Taylor

The primary demand for weather science came from agriculture until the sudden needs of aviation in wartime and in peace gave a very expansionist impulse to meteorology.

Those of us who are concerned with food production are, on the one hand, grateful for a tremendous progress in weather observing, reporting and forecasting which could not have been achieved without this outside influence and, on the other, envious of the amount of attention given to this upstart and vociferous consumer of meteorological information.

A result of this new situation is a fairly widespread lack of exchange between agricultural and meteorological services, especially in developing countries.

Efforts are now being made to remedy this, greatly facilitated by a growing desire on the part of national meteorological services to diversify now that the aviation pressure is relaxing. Nowadays meteorologists tend to be physicists and mathematicians, rather than naturalists, but geographers have also come to the rescue. A shining example of the effective help they can render in the development of agricultural meteorology is the work of Dr. James A. Taylor at the University College of Wales in Aberystwyth.

Yearly symposia have been held there since 1958 on various aspects of agricultural meteorology and, from their proceedings (Memoranda 1-8), Dr. Taylor has selected some notable contributions rearranged under the headings of: The Environment; The Hazards; and Productivity.

This is an excellent book. Its contents apply primarily to Wales and, more generally, to temperate regions, but there is nevertheless much in it of benefit to

anyone concerned with the rational development of agriculture in warmer and drier climates.

For instance, the climatic factors which favor the incidence of sheep liver fluke or of potato blight are sensibly the same all over the world; and the upper air currents which carry the spores of rusts affecting cereals are part of a global atmospheric circulation which can link the Atlas with the Caucasus.

Developments in ecology (an integrated consideration of all the factors of the environment) and in operational research (which give dimensions to hitherto subjective impressions) discussed in this book, lend themselves to extrapolation for work in developing countries. However, the process cannot be automatic. Sensible adaptation, which requires local knowledge as well as outside know-how, is essential.

J.A.M. Cochemé

Weather and Agriculture, edited by James A. Taylor.

Pergamon Press Ltd., London, 1967, (225 p.), 80s. (U.K. and Eire) and 93s. (all other countries excluding U.S.A. and Canada).

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Ceres was adopted as the name of this review because of its close association with agriculture, particularly the growing of food crops. *Ceres*, the Roman version of the Greek goddess *Demeter*, has its equivalent in most languages just as *Ceres* herself, symbol of agriculture and representing mother earth, has her equivalent in most cultures.



Roman copy of a Greek statue of CERES of the 5th century B.C.

By the beginning of the Roman Republic, Sicily was known as the center of the worship of both *Ceres* and her daughter *Persephone*. *Ceres* herself was then considered as the most ancient and venerable of all the gods and goddesses. During the famine which the Romans suffered after the expulsion of the Tarquin monarchs, the dictator *Tulio Postumio* consulted the *Sibylline books* which advised that the worship of *Ceres* should be established in Rome. A temple to *Ceres* was therefore built in 493 B.C. on the *Aventine hill* (near the present site of *FAO*). *Ceres* was then regarded as the goddess of food grains and patroness of the corn trade.

Ceres also adopted *Triptolemus*, the son of *Celeus*, and initiated him in the arts of agriculture. He became identified as the deity of agricultural crafts, and in some legends is named as the inventor of the plow.

The attributes of *Ceres* are chiefly connected with her position as goddess of agriculture and vegetation: ears of corn, the poppy, the mystic basket (*kalathos*) filled with flowers, corn and fruits of all kinds, the pomegranate being especially common. As the earth goddess she is often associated with the snake, myrtle, asphodel and narcissus.

Letter to the Reader

Raising over a million dollars in six years to help thirty leper colonies is not enough for Cardinal Léger, Archbishop of Montreal. He is leaving his high office and the affluent society to go and tend the lepers in Africa. "Beating the drum to raise funds is easy. It's going down there that's hardest," he says.

This is an example of self-denial, of starting over from the ground up, that commands respect. The Cardinal is sixty-three years old.

Two authors appearing in this number of *CERES* deal with the same problem, but from a different point of view. *Jan Tinbergen* and *Janez Stanovnik* believe that development is only possible through the establishment of a global plan. "Coordination and cooperation," they say.

Those convinced of the need for action to help the underprivileged of the third world, honest citizens of the industrialized societies, gravitate toward the kind of immediate and personal solution chosen by the Cardinal. Action, especially if followed by results — however slight — is far more satisfying to the individual than the most brilliant theory.

One of the most frequent criticisms of aid efforts is that local and uncoordinated action is like pouring water into a sieve. Aiding ten families, or a village, to produce more cassava, or rice, falls far short of the takeoff of an entire economy. In other words, the act of charity may soothe the giver's conscience, but not the recipient's anxiety for the future.

What should we do then? Which is the right choice?

Above all, we must not try to "hide behind one's finger," as an old Greek proverb puts it. To evade reality through grandiose plans would be as harmful as not having a plan at all. The integration of all the significant elements within the structure of a global development plan, handled with realism but with the visionary's faith as well, seems the only effective course open to us.

The elaboration of a plan that will be useful to billions of people is an arduous task. We can see from the outset the quantitative problems: gathering an enormous volume of statistical data on a country-by-country basis; analyzing it; and determining the order of priorities and objectives.

Yet the qualitative aspects are no less complex. Understanding by the planners of the poorer countries' present and future needs, and of the resources which are, or may be available to meet these needs must form the basis for this development plan. Who can produce such a plan if not the countries themselves, working within the United Nations.

Moreover, now that there is hope of an imminent end to the conflict in Vietnam, the positive factors favoring a worldwide plan acquire a new element: the possibility of an immediate, or at least rapid, shift of the forces of destruction to forces for the advancement of the underdeveloped countries.

Economists are the first to realize that reality is more complex and more uncertain than the forecasts and targets planners work with. Unfortunately, the pessimists amongst them have not often been proved wrong. The prospect of peace should now give the optimists their turn.

A. Biro



RAW MATERIAL FOR PAPERMAKING

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